

User's Manual

1. Usage Notice

2. Introduction

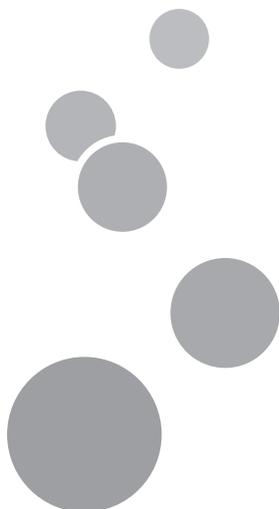
3. Basic Operations

4. User Settings

5. Troubleshooting

6. Maintaining the filter

7. Appendices



Read this manual carefully before you use this machine and keep it handy for future reference. For safe and correct use, be sure to read the Precautions in this manual before using the machine.



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Precautions



Follow all warnings, precautions and maintenance as recommended in this user's guide to maximize the life of your unit.

- Warning- This apparatus must be earthed.
- Warning- Do not look into the projector's lens when the light source is on. The bright light may hurt your eyes.
- Warning- To reduce the risk of fire or electric shock, do not expose this projector to rain or moisture.
- Warning- Please do not open or disassemble the projector as this may cause electric shock.
- Warning- When switching the projector off, please ensure the cooling cycle has been completed before disconnecting power. Allow 60 seconds for the projector to cool down.
- Warning- Do not use lens cap when projector is powered on.
- Warning- Turn on the projector first and then the signal sources.
- Warning- Do not remove the cabinet cover, or you may be exposed to dangerous voltage. Refer servicing to qualified service personnel only.
- Warning- The supplied power cord is for use with this machine only. Do not use it with other appliances. Doing so could result in fire or electric shock.

Usage Notice

- Warning- This product should be operated only from the type of power source which does not exceed the voltage range specified on the rating label and the power cord. If you are not sure of the type of power supply to your home, consult your sales representative or local power company.
- Warning- Do not use the polarized plug with an extension cord, receptacle, or other outlet unless the blades can be inserted completely with three wire grounding type to prevent blade exposure. Failure to follow these instructions may result in fire or electric shock.
- Warning- Plastic bags can be dangerous, please do not leave near babies and young children. To avoid the threat of suffocation, please keep away from their nose and mouth.
- Warning- Installing the Projector on a Wall or Ceiling:
 - a) Do not attempt to clean or replace parts for a machine that is installed in a high location on a wall or ceiling. Doing so may cause it to fall down, resulting in an injury.
 - b) Contact your sales or service representative to clean or replace parts for a machine that is installed on a wall or ceiling.
 - c) If a machine is incorrectly installed on a wall or ceiling, it may fall down and cause an injury. Contact your sales or service representative if you want to install a machine on a wall or ceiling.
 - d) Do not obstruct the machine's vents. Doing so risks fire caused by overheated internal components.
 - e) For users, do not install the projector by yourself. Contact your sales or service representative if you want to install the projector on a wall or ceiling.

Usage Notice

- f) For sales or service representatives:
- Use brackets that are strong enough to support the projector. PJ WXL4540 Series and LW3000ST Series projectors weigh about 5.5 kg (12.2 lb.).
 - The projector must be installed in a location that is sturdy enough to support the full weight of the projector and brackets.
 - Use only the screws (four M4~16 screws) provided with the projector to attach the brackets to the projector.
 - Use all three of the projector's screw holes to attach the brackets. The locations of the screw holes are shown in the illustration below. Make sure that the screws are tightened firmly.
- Caution- Never operate this unit on AC power during a thunderstorm. If you see lightning or hear thunder, never touch the unit, cables and/or peripherals. An electric surge caused by the storm, may result in an electrical shock or damage to the unit.
- Caution- 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.
- Caution- Do not place or keep the projector within the reach of the children. It may fall or tip over, possibly causing serious injury.
- Caution- Do not stack other equipment on this product and do not place this product on other equipment. The top and bottom surface of this product increase in temperature during normal use and may damage the other unit.
- Caution- Do not use attachments not recommended by the product manufacturer. Use of an incompatible attachments could cause hazards or damage to the product.

Usage Notice

- Caution- Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product.
- Caution- Unplug this product from the wall outlet and take the product to qualified service personnel if you encounter any of the following conditions:
 - a) The power supply cord or plug is damaged.
 - b) Liquid has been spilled, or objects have fallen into the product.
 - c) The product has been exposed to rain or water.
 - d) The product does not operate normally when following the operating instructions. Adjust only those controls that are covered by the operating instructions.
 - e) The product has been dropped or damaged in any way. (If the cabinet should break, please handle with care to avoid injury.)
- Caution- Do not place anything in front of the lens while the projector is operating. Things placed in front of the lens may overheat and burn or start a fire.
- Caution- Unauthorized substitutions may result in fire, electric shock, or other hazards.
- Caution- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to verify that the product is in proper operating condition.
- Caution- Do not leave thermal paper documents or easily deformed items on top of the unit or near the air exhaust for long periods of time.

Usage Notice

- Caution- The heat from the unit could erase the information on the thermal paper, or cause deformation or warping.
- Caution- Do not use the product in a closed installation location. Do not place the product in a box or in any other closed installation location. Otherwise it may overheat, which could result in a risk of fire.

Do:

- After unpacking this product, read the manual carefully, and follow all the operating and other instructions.
- Turn off the product before cleaning.
- Use a soft cloth moistened with mild detergent to clean the display housing.
- Disconnect the power plug from AC outlet if the product is not being used for a long period of time.

Do not:

- Block the slots and openings on the unit provided for ventilation.
- Use abrasive cleaners, waxes or solvents to clean the unit.
- Use under the following conditions:
 - Extremely heat, cold or humidity.
 - In areas susceptible to excessive dust and dirt.
 - Near any appliance generating a strong magnetic field.
 - In direct sunlight.

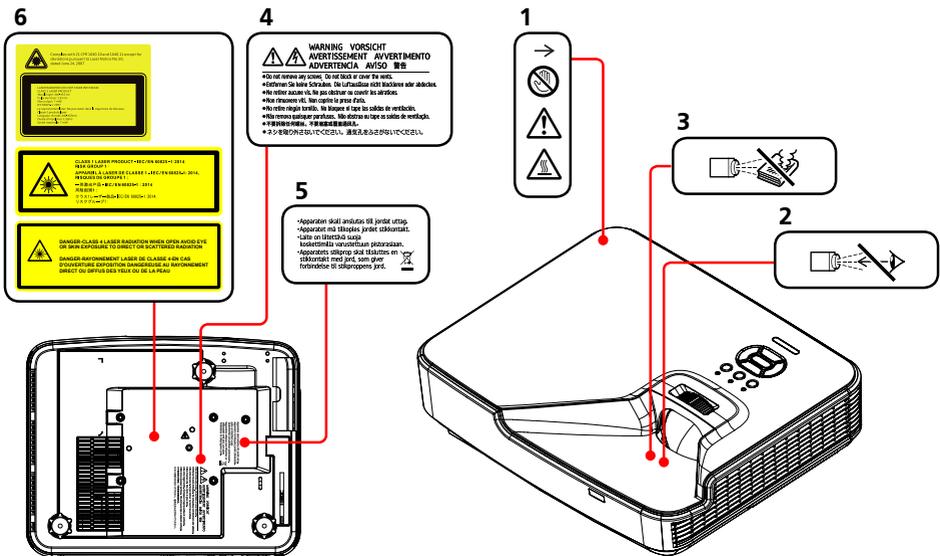
Important:

Contents of this manual are subject to change without prior notice. In no event will the company be liable for direct, indirect, special, incidental, or consequential damages as a result of handing or operating this product.

Usage Notice

Safety Labels of This Machine

- 1 Do not block the air intake or exhaust. Doing so could cause a fire due to internal overheating. Do not place your hands, face, or other objects near the air exhaust, the bottom of the unit. Doing so could result in injury and/or damage the object.
- 2 Do not look into the lens while the light source is on. The strong light from the light source may cause damage to your eyesight.
- 3 Do not place anything in front of the lens while the projector is operating. Things placed in front of the lens may overheat and burn or start a fire. If you want to temporarily stop the projected image, use the AV mute on the remote control or the keypad.
- 4 Do not remove any screws. Do not block or cover the vents.



If you wish to discard this product, please contact your local authorities, the shop where you bought this product, your local dealer or sales/service representatives.

Remote Control Battery

If you wish to discard this product, please contact your local authorities, the shop where you bought this product, your local dealer or sales/ service representatives.

Warning

- Never throw batteries into a fire.
Using the batteries improperly may cause them to explode or leak and may result in serious injury. If battery-leaking fluid contacts skin, wash the fluid off immediately with clean water and consult a doctor. If the fluid spills on an instrument, avoid contact and wipe it off using tissue paper. Then dispose of the used tissue paper as flammable garbage after moistening the tissue with water.
- Do not ingest battery, Chemical Burn Hazard.
The remote control supplied with this product contains a coin cell battery.
If the coin cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.
- Keep new and used batteries away from children.
If the battery compartment does not close securely, stop using the product and keep it away from children.
If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.

Notes

- Be sure to use CR2025 lithium 3.0V coin battery.
- Dispose of batteries in a designated disposal area.
- Attention should be drawn to the environmental aspects of battery disposal.
- If the remote control does not operate correctly, or if the operating range becomes reduced, replace the battery.
- Avoid contact with water or liquid.
- Do not expose the remote control to moisture or heat.
- Do not drop the remote control.
- Dispose of used battery according to the instructions.

Usage Notice

Regulation & Safety Notices

This appendix lists the general notices of your Projector.

Notice: Users in the United States of America

FCC notice

MODEL NAME: RICOH PJ XL4540

TRADE NAME: PROJECTOR
MODEL NAME: RICOH XL4540
Tested To Comply
With FCC Standards
 FOR HOME OR OFFICE USE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference and
2. This device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device 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. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Usage Notice

RESPONSIBLE PARTY: Ricoh Americas Corporation
5 Dedrick Place, West Caldwell, NJ 07006
Phone: 973-882-2000

Notice: Shielded cables

All connections to other computing devices must be made using shielded cables to maintain compliance with FCC regulations.

Caution

Changes or modifications not expressly approved by the manufacturer could void the user's authority, which is granted by the Federal Communications Commission, to operate this projector.

Notes to Users in the State of California

Perchlorate Material - special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate.

WARNING: Handling the cord on this product will expose you to lead, a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm. ***Wash hands after handling.***

Usage Notice

Declaration of Conformity for EU countries

- EMC Directive 2004/108/EC (including amendments)
- Low Voltage Directive 2006/95/EC

Notice: Users in EU countries

CE Marking Traceability Information (For EU Countries Only)

Manufacturer:
Ricoh Co., Ltd.
3-6 Nakamagome 1-chome, Ohta-ku, Tokyo. 143-8555, Japan

Importer:
Ricoh Europe PLC
20 Triton Street, London. NW1 3BF, United Kingdom

User Information on Electrical and Electronic Equipment

Users in the countries where this symbol shown in this section has been specified in national law on collection and treatment of E-waste.

Our Products contain high quality components and are designed to facilitate recycling.
Our products or product packaging are marked with the symbol below.



This product contains substances which are harmful to humans and the environment.

Usage Notice

Notice: Users in Turkey

EEE Yönetmeliğine Uygundur.

Bu sistem sarf malzemeleri ve yedek parçaları da dahil olmak üzere EEE Yönetmeliğine Uygundur.

All Other Users

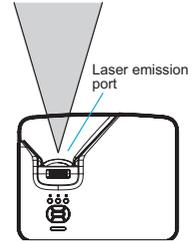
If you wish to discard this product, please contact your local authorities, the shop where you bought this product, your local dealer or sales/service representatives.

Laser Notice

- This Product is classified as Class 2 of IEC60825-1:2007 and also complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No.50, dated June 24,2007. (For USA)
- IEC 60825-1:2014 and IEC 62471: CLASS 1 LASER PRODUCT - RISK GROUP 1. (For EU countries and Japan and China)

Light source specification

3.5W laser diodes x 19
Wavelength: 440-455nm
Pulse duration: 1.32ms



Warning

- This projector has built-in laser module.
Possibly hazardous optical radiation emitted from this product.
Do not stare into the beam. May be harmful to the eyes.

Caution

- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Usage Notice

Notice: Users in the EU

Note for the Battery and/or Accumulator Symbol



In accordance with the Battery Directive 2006/66/EC Article 20 Information for end-users Annex II, the above symbol is printed on batteries and accumulators. This symbol means that in the European Union, used batteries and accumulators should be disposed of separately from your household waste. In the EU, there are separate collection systems for not only used electrical and electronic products but also batteries and accumulators. Please dispose of them correctly at your local community waste collection/recycling centre.

Notice: Users in Taiwan



廢電池請回收

請勿將電池當作一般垃圾丟棄。這個標誌表示電池不應視為一般垃圾丟棄。僅適用於台灣。

Other Information

Copyrights to Images

When projecting images using the projector, be careful not to infringe the copyright of protected materials.

The following are examples that may infringe the copyright of protected materials.

- Broadcasting images or movies for commercial purposes
- Modifying images or movies using functions such as freeze, magnify, or zoom to broadcast images for commercial purposes or public viewing
- Varying the aspect ratio of images or movies using a function that changes the screen size to broadcast images for commercial purposes or public viewing

Note to Users Viewing 3D Images

Pay attention to the following points when viewing images using 3D glasses with projector:

- How 3D images are viewed may vary according to the individual.
- Do not use 3D glasses for viewing any material other than 3D images.
- Before viewing 3D images, make sure to read the manuals provided with your 3D glasses and 3D compatible content.
- Avoid viewing 3D images for a long period of time. Take a break of 15 minutes or longer after every hour of viewing.
- If you feel sick while viewing 3D images, stop viewing them. If you continue to feel sick, consult a doctor.
- When viewing 3D image in a room where on LED lighting system or fluorescent lights are used, you may feel that the light in the room flickers. If this is the case, dim the lights until you do not notice any flickers, or turn off the lights.
- If you or any member of your family has a history of light-sensitive seizures, consult a doctor before viewing 3D images.

Product Features

Outstanding features include:

- Single chip DLP® technology
- NTSC3.58/NTSC4.43/PAL(B/D/G/H/I/M/N)/SECAM (B/D/G/K/K1/L) and SDTV(480i/576i), EDTV(480p/576p), HDTV(720p/1080i/1080p) compatible
- Multi-Auto functions: Auto detection, Auto image and Auto saving the adjustments
- Full function remote control
- User friendly multilingual on screen display
- Advanced digital keystone correction and high quality full screen image re-scaling
- Built-in mono 10-Watt speaker.
- UXGA, WXGA, SXGA+, SXGA, XGA compression and VGA re-sizing
- Macintosh compatible

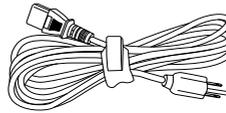
Introduction

Package Overview

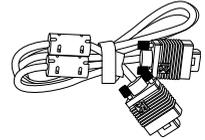
Unpack and inspect the box contents to ensure all parts listed below are in the box. If something is missing, please contact your nearest customer service center.



Projector



Power Cord



VGA Cable



- ❖ Due to different applications in each country, some regions may have different accessories.



Remote Control
(with Battery)



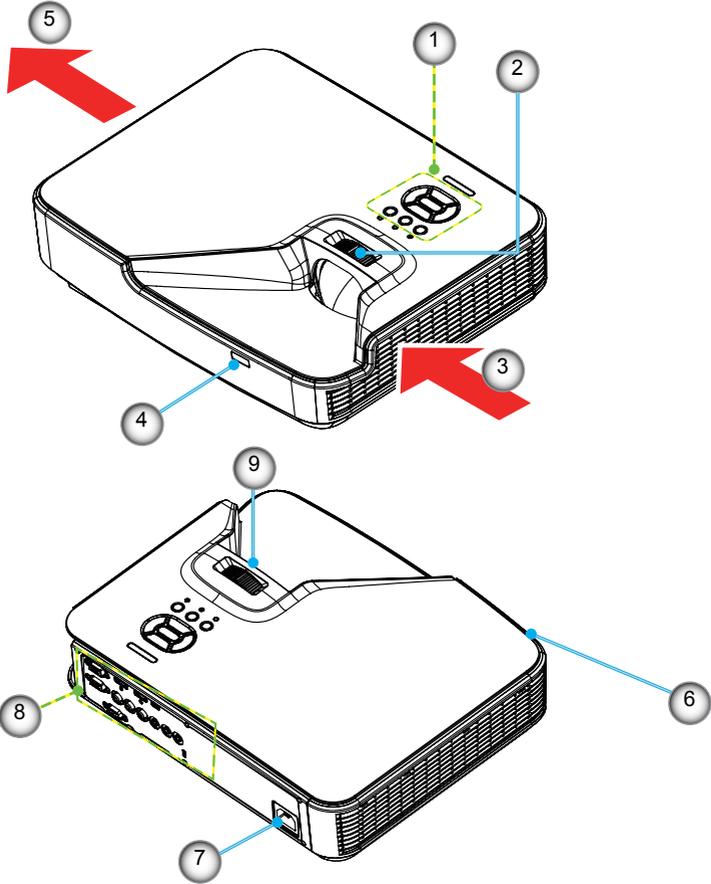
- ❖ Use only the VGA cable, power code provided with the projector.

Documentation :

- Read This First
- User Manual (CD)

Product Overview

Main Unit

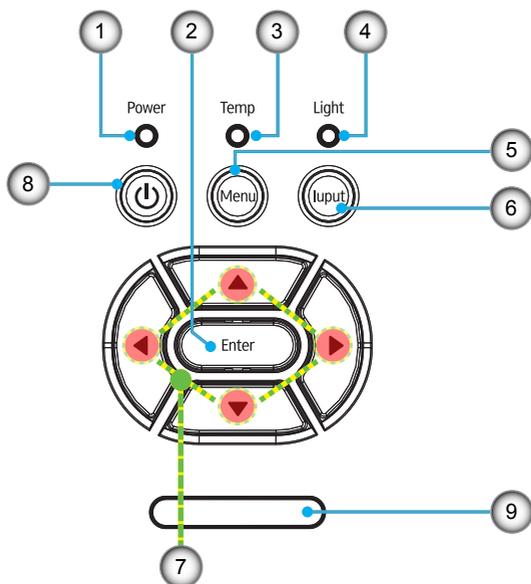


❖ The interface is subject to model's specifications.

- | | |
|-------------------------|-------------------------------|
| 1. Control Panel | 7. Power Socket |
| 2. Focusing Ring | 8. Input / Output Connections |
| 3. Ventilation (inlet) | 9. Lens |
| 4. IR Receiver | |
| 5. Ventilation (outlet) | |
| 6. Speaker | |

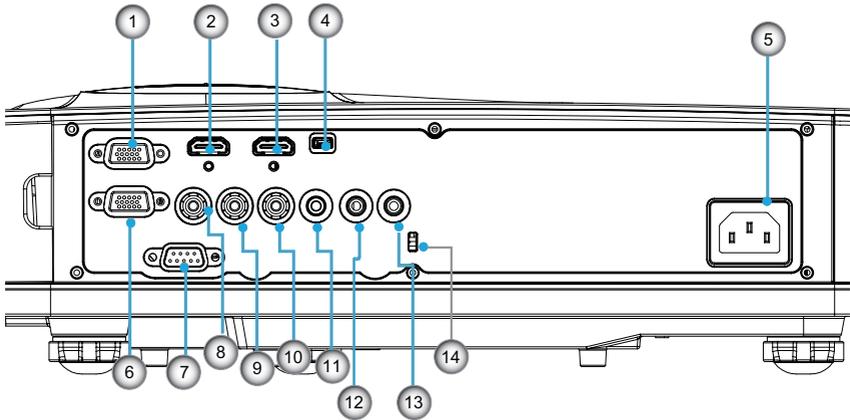
Introduction

Control Panel



1. Power LED
2. Enter
3. Temp LED
4. Light LED
5. Menu
6. Input
7. Four Directional Select Keys
8. Power/Standby button
9. IR Receiver

Input/Output Connections



NOTE

- ❖ The interface is subject to model's specifications.

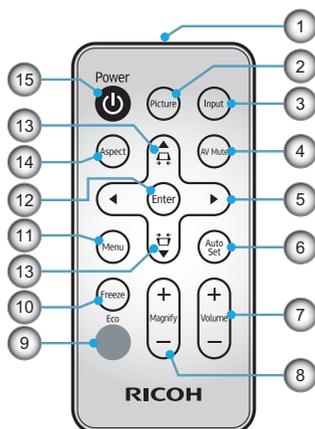
NOTE

- ❖ Monitor loop through only support in Computer-In/YPbPr.

1. Computer-In/YPbPr Connector (PC Analog Signal/Component Video Input/HDTV/YPbPr)
2. HDMI2 Input Connector
3. HDMI1 Input Connector
4. Service
5. Power Socket
6. Monitor-Out Connector
7. PC Control (9-pin DIN Type)
8. Video Input Connector
9. Audio Input 2 (right) Connector
10. Audio Input 2 (left) Connector
11. Audio Output Connector (3.5mm mini jack)
12. Audio Input 1 Connector (3.5mm mini jack)
13. Microphone Input Connector
14. Kensington™ Lock Port

Introduction

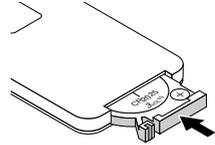
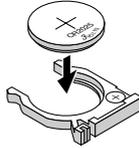
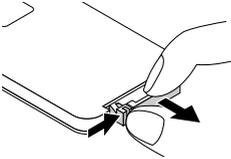
Remote Control



- | | |
|------------------------------------|----------------------------------|
| 1. Transmitter | 9. Eco |
| 2. Picture | 10. Freeze |
| 3. Input | 11. Menu |
| 4. AV Mute | 12. Enter |
| 5. Four Directional Select
Keys | 13. Keystone ∇ / ∇ |
| 6. Auto Set | 14. Aspect |
| 7. Volume +/- | 15. Power |
| 8. Magnify +/- | |

Remote Control Battery Installation

- 1 Press firmly and slide the battery cover off.
- 2 Remove the old battery and install new one (CR2025). Ensure that the side with a "+" is facing up.
- 3 Put the cover back



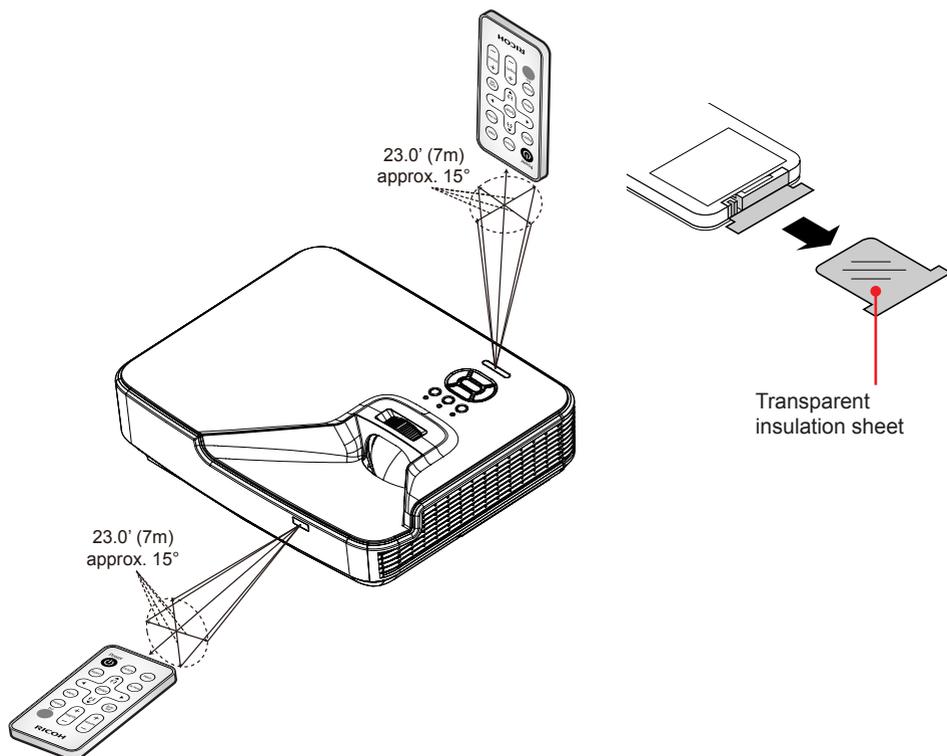
To ensure safe operation, please observe the following precautions :

- Never throw batteries into a fire.
 - Do not ingest battery, Chemical Burn Hazard.
 - Keep new and used batteries away from children.
- For more detailed information, please see page 8.

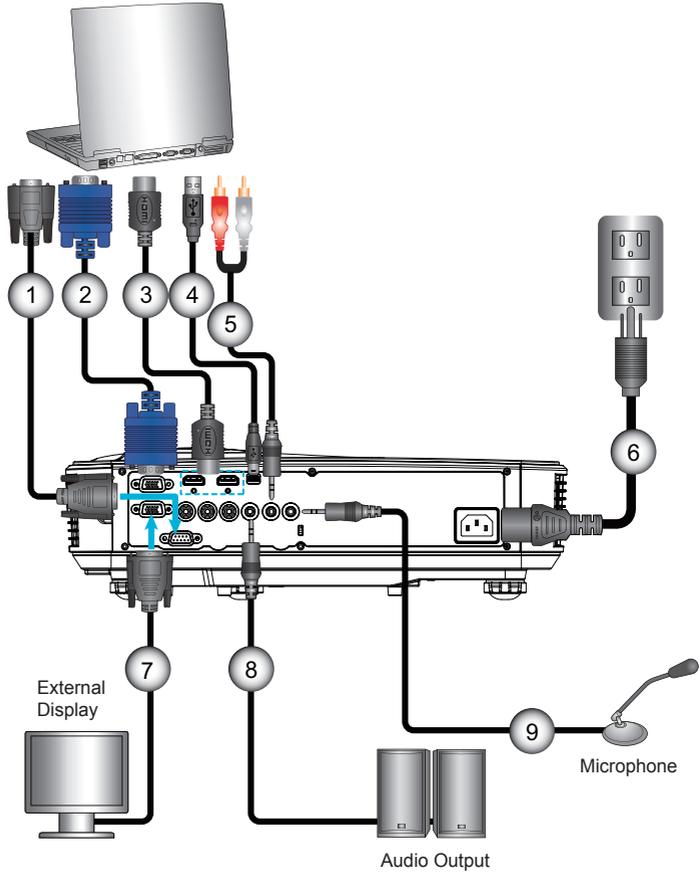
Introduction

Remote Control Operating Range

- When pointing the remote control directly toward the projector (Remote control signal receiver), operating range for the remote control is within 7 m (23.0 ft). Also, operation range available for four directions (up, down, left, right to the projector) is $\pm 15^\circ$ and the operation distance may become short.
- If there are any obstacles between the remote control and the remote control signal receiver, the remote control may not operate correctly.
- You can operate the projector by reflecting the remote control signal on the screen. The operating range may differ due to the loss of light caused by the properties of the screen.
- When the remote control signal receiver is lit with a fluorescent light or other strong light source, the projector may become inoperative. Set the projector as far from the luminous source as possible.
- You can operate all of the functions of the projector via the remote control. Make sure not to lose the remote control.
- Before using the remote control for the first time, remove the transparent insulation sheet.



Connecting the Projector Connect to Computer/Notebook

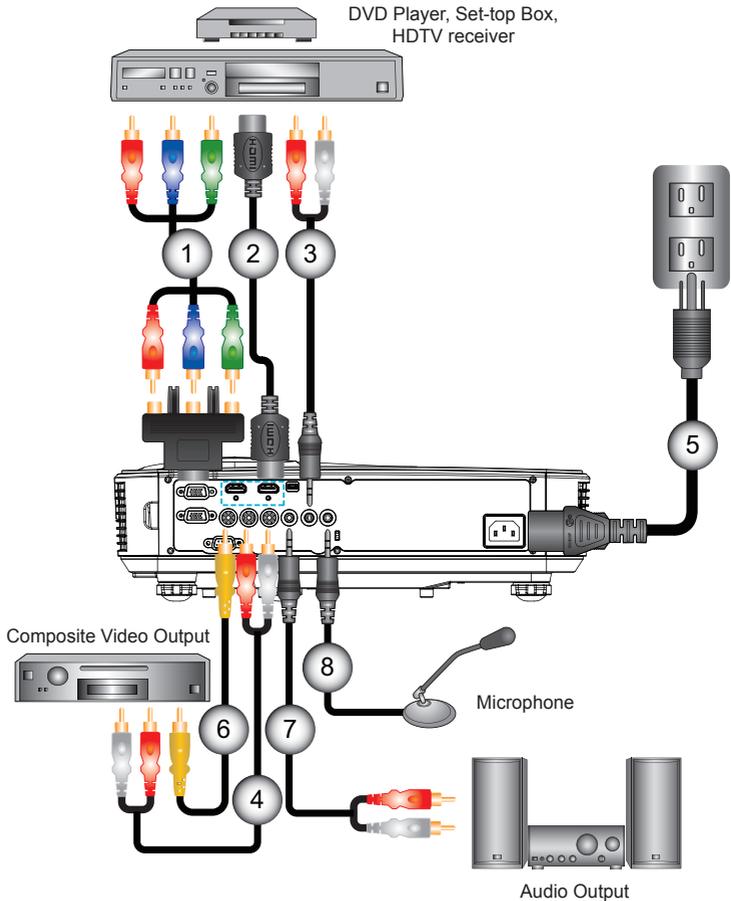


- ❖ Due to the difference in applications for each country, some regions may have different accessories.
- ❖ (*) Optional accessory

1.....	*RS232 Cable
2.....	VGA Cable
3.....	*HDMI Cable
4.....	*USB Cable
5.....	*Audio Cable/RCA
6.....	Power Cord
7.....	*VGA Output Cable
8.....	*Audio Output Cable
9.....	*Audio Input Cable

Basic Operations

Connect to Video Sources



- 1.....*15-Pin to 3 RCA Component/HDTV Adaptor
- 2.....*HDMI Cable
- 3.....*Audio Cable
- 4.....*Audio Cable/RCA
- 5.....Power Cord
- 6.....*Composite Video Cable
- 7.....*Audio Cable/RCA
- 8.....*Audio Input Cable

Powering the Projector On / Off

Powering On the Projector

1. Securely connect the power cord and signal cable. When connected, the POWER/STANDBY LED will turn Orange.
2. Turn on the light source by pressing “” button either on the projector or on the remote. At this moment, the POWER/STANDBY LED will now turn Blue. ❶

The startup screen will display in approximately 10 seconds. The first time you use the projector, you will be asked to select the preferred language and power saving mode.

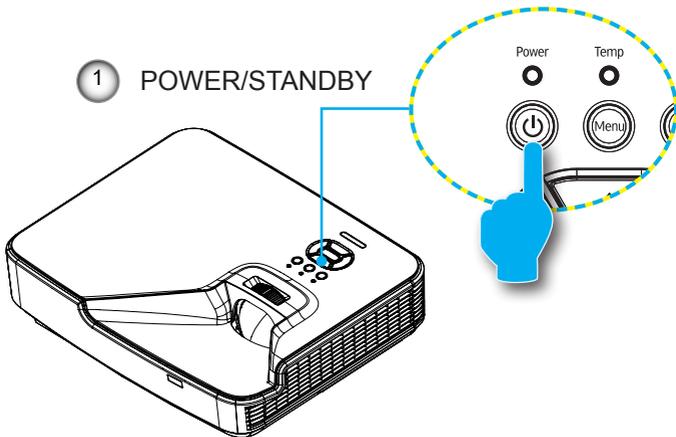
3. Turn on and connect the source that you want to display on the screen (computer, notebook, video player, etc). The projector will detect the source automatically. If not, push menu button and go to “OPTIONS”. Make sure that the “Source Lock” has been set to “Off”.
- ❖ If you connect multiple sources at the same time, press the “INPUT” button on the control panel or direct source keys on the remote control to switch between inputs.



❖ When the power mode is in standby mode (power consumption < 0.5W), the VGA output/ input and audio will be deactivated when the projector is in standby.



❖ Turn on the projector first and then select the signal sources.



Powering Off the Projector

1. Press the “” button on the remote control or on the control panel to turn off the projector. The following message will be displayed on the screen.



Press the “” button again to confirm otherwise the message will disappear after 10 seconds. When you press the “” button for the second time, the fan will start cooling the system and will shut down.

2. The cooling fans continue to operate for about 4 seconds for cooling cycle and the POWER/STANDBY LED will flash Orange. When the POWER/STANDBY LED lights solid Orange, the projector has entered 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 “” button to restart the projector.

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

Warning Indicator

When the warning indicators (see below) come on, the projector will automatically shutdown:



- ❖ Contact the nearest service center if the projector displays these symptoms.
- ❖ “Light” LED indicator is lit red and if “POWER/STANDBY” indicator flashes amber.
- ❖ “TEMP” LED indicator is lit red, this indicates the projector has overheated. Under normal conditions, the projector can be switched back on.
- ❖ “TEMP” LED indicator flashes red and if “POWER/STANDBY” indicator flashes amber.

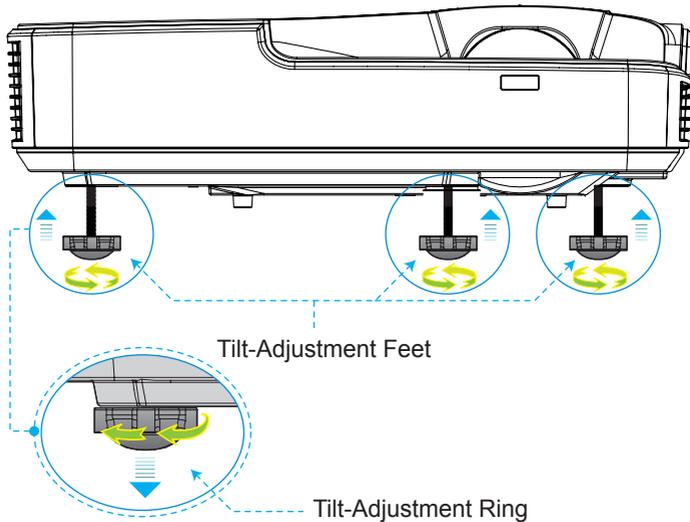
Unplug the power cord from the projector, wait for 30 seconds and try again. If the warning indicator light up again, please contact your nearest service center for assistance.

Adjusting the Projected Image

Adjusting the Projector's Height

The projector is equipped with elevator feet for adjusting the image height.

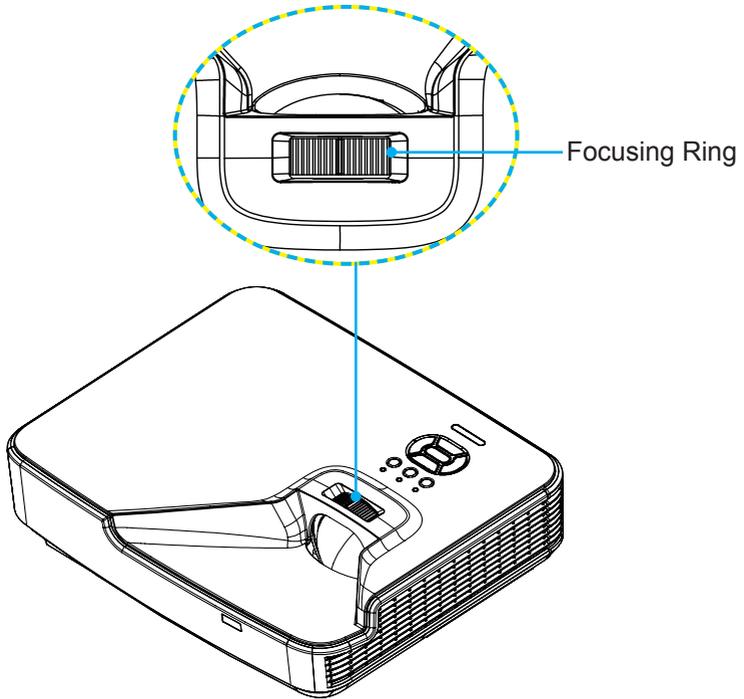
1. Locate the adjustable foot you wish to modify on the underside of the projector.
2. Rotate the adjustable ring clockwise to raise the projector or counter clockwise to lower it. Repeat with the remaining feet as needed.



Basic Operations

Adjusting zoom-in of the projector

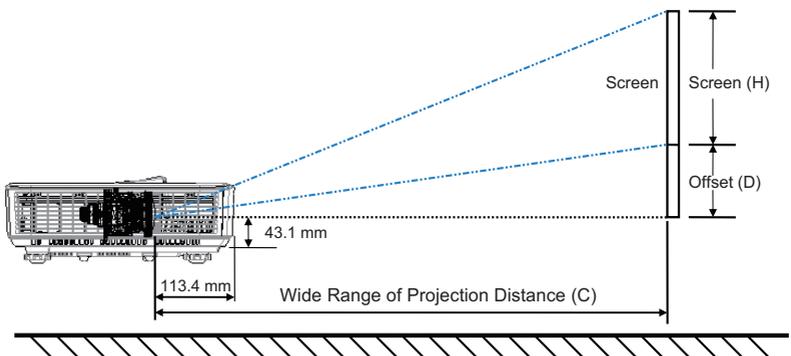
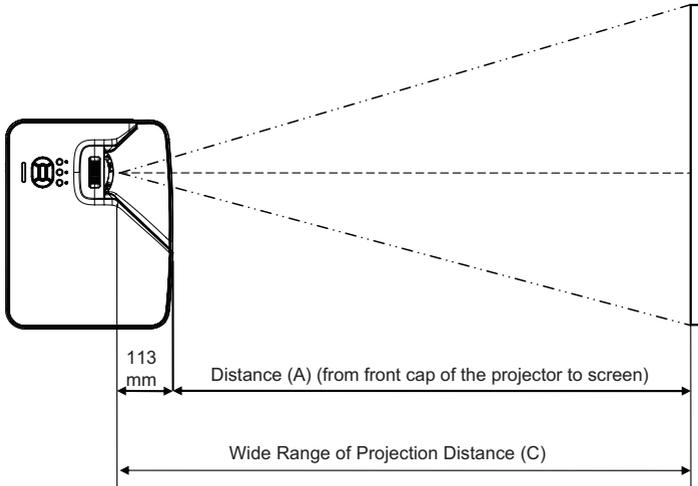
To focus on the image, slide the focus ring to the left or to the right until the image is clear.



Basic Operations

Adjusting Projection Image Size (Diagonal)

- ▶ XGA/WXGA series: focus range 1.3123 ~ 10.1706 ft. (0.4 ~ 3.1m)



Basic Operations

XGA

Screen Size W x H						C (Projection Distance)		Front cover to screen (mm)	D (Offset)		Bottom cover to bottom of screen (mm)
Diagonal Length of Image		Width		Height							
inch	mm	inch	mm	inch	mm	inch	mm		inch	mm	
56.4	1432.3	45.1	1146.5	33.9	859.8	27.9	710.8	597.4	6	152.2	195.3
60	1524	48	1219.2	36	914.4	29.6	752.2	638.8	6.4	161.9	205.0
75	1905	60	1524	45	1143	37.0	940.3	826.9	8.0	202.4	245.5
77	1955.8	61.6	1564.6	46.2	1173.4	38.0	965.4	852.0	8.2	207.8	250.9
80	2032	64	1625.6	48	1219.2	39.5	1003.0	889.6	8.5	215.9	259.0
100	2540	80	2032	60	1524	49.4	1253.7	1140.3	10.6	269.9	313.0

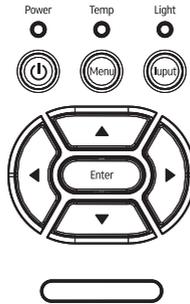
WXGA

Screen Size W x H						C (Projection Distance)		Front cover to screen (mm)	D (Offset)		Bottom cover to bottom of screen (mm)
Diagonal Length of Image		Width		Height							
inch	mm	inch	mm	inch	mm	inch	mm		inch	mm	
70	1778	59.6	1513.1	37.2	945.7	30.9	786.9	673.5	5.6	141.9	184.9
75	1905	63.6	1615.4	39.7	1009.6	33.1	841.6	734.9	6.0	151.4	194.5
87	2209.8	73.8	1873.9	46.1	1171.2	38.4	976.3	862.9	6.9	175.7	218.8
92	2336.8	78.0	1981.6	48.8	1238.5	40.6	1032.4	919.0	7.3	185.8	228.9
100	2540	84.8	2153.9	53.0	1346.2	44.2	1122.2	1008.8	7.9	201.9	245.0

❖ This table is for user's reference only.

Control Panel & Remote Control

Control Panel



Using the Control Panel

POWER		Refer to the “Power On/Off the Projector” section on pages 25-26.
Enter		Press “Enter” to confirm your item selection.
INPUT		Press “INPUT” to select an input signal.
MENU		Press “MENU” to launch the on-screen display (OSD) menu. To exit OSD, press “MENU” again.
Four Directional Select Keys		Use ▲ ▼ ◀ ▶ to select items or make adjustments to your selection.
LIGHT LED		Refer to the LED indicator of the projector light source status.
TEMP LED		Refer to the LED indicator of the projector temperature status.
ON/STANDBY LED		Refer to the LED indicator of the projector power status.

User Settings

Remote Control



Using the Remote Control

Transmitter	Send signals to the projector.
Picture	Select the preset picture mode.
Input	Select the input source.
AV Mute	Momentarily turn off/on the audio and video.
Four Directional Select Keys	Use ▲ ▼ ◀ ▶ to select items or make adjustments to your selection.
Auto Set	Automatically synchronize the projector to the input source.
Volume +/-	Increase/decrease speaker volume.
Magnify +/-	Enlarge part of the screen image. Reduce the enlarged part of the image. (Digital Zoom)
Eco	Switch LASER Power mode between Normal/ECO mode

User Settings

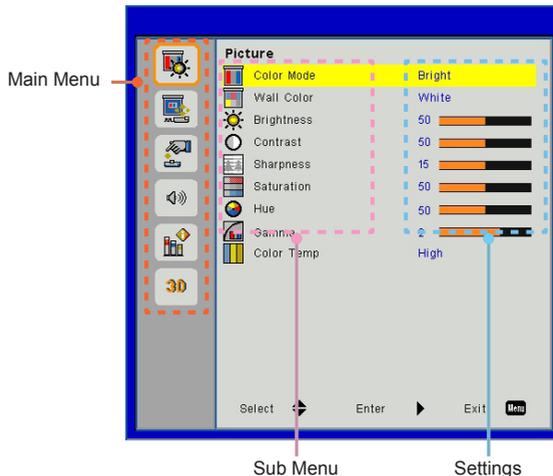
Freeze	Pause the screen image. Press again to resume the screen image.
Menu	Press "Menu" to launch the on screen display (OSD), or go back to the previous menu.
Enter	Select or confirm settings
Keystone  / 	Adjust the image to compensate for distortion caused by tilting the projector.
Aspect	Use this function to choose your desired aspect ratio for the screen.
Power	Refer to the "Power On/Off the Projector" section.

On-screen Display Menus

The Projector has multilingual On-screen Display menus that allow you to make image adjustments and change a variety of settings.

How to operate

1. To open the OSD menu, press “Menu” on the Remote Control or Projector Keypad.
2. When OSD is displayed, use the ▲ ▼ keys to select any item in the main menu. While making a selection on a particular page, press the ► or “Enter” key to enter sub menu.
3. Use the ▲ ▼ keys to select the desired item and adjust the settings using the ◀▶ key.
4. Select the next item to be adjusted in the sub menu and adjust as described above.
5. Press “Enter” to confirm, and the screen will return to the main menu.
6. To exit, press “Menu” again. The OSD menu will close and the projector will automatically save the new settings.



User Settings

OSD Menu Tree

Main Menu Tree 1st level	2nd level	3rd level	4th level	Default Value	Range
Picture	Color Mode	Bright		depend on signal type and change Color Mode to User Mode if customer changes the settings	
		PC			
		Movie			
		Game			
		User			
	Wall color	White/ Light yellow/ Light Blue/ Pink/ Dark Green		White	
	Brightness			depend on color mode	0 ~ 100
	Contrast			depend on color mode	0 ~ 100
	Sharpness			depend on color mode	0 ~ 31
	Saturation			depend on color mode	0 ~ 100
Hue			depend on color mode	0 ~ 100	
Gamma			depend on color mode	0 ~ 3	
Color Temp	High / Low		High		
Screen	Aspect Ratio	Auto		Fill Screen	
		4:3			
		16:9			
		16:10			
		Fill Screen			
	Phase			depend on input signal	0 ~ 31
	Clock			depend on input signal	-5 ~ 5
	H.Position			depend on input signal	depend on input signal(ex:-5 ~ 5)
	V.Position			depend on input signal	depend on input signal(ex:-5 ~ 5)
	Digital Zoom			0	0 ~ 10
	V Keystone			0	-40 ~ 40
	Ceiling Mount	Front		Front Ceiling	
Front Ceiling					
Rear					
Rear Ceiling					

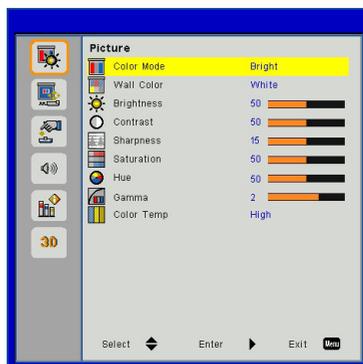
User Settings

Main Menu Tree 1st level	2nd level	3rd level	4th level	Default Value	Range
Setting	Language	English German French Italian Spanish Polish Swedish Dutch Portugese Japanese Traditional Chinese Simplified Chinese Thai Indonesian Arabic Norsk Turkish Danish		English	
	Menu Location	Left Top, Right Top, Center, Left Bottom, Right Bottom		Center	
	Closed Caption	Off/CC1/CC2/CC3/CC4		Off	
	VGA OUT (Standby)	Off/On		Off	
	VGA 2 (Func- tion)	Input/Output		Input	
	Test Pattern	Off/On		Off	
	Reset	Yes/No		No	
Volume	Speaker	On/Off		On	
	Line Out	On/Off		On	
	Microphone	On/Off		On	
	Mute	On/Off		Off	
	Volume			15	0 ~ 30
	Microphone Volume			15	0 ~ 30

User Settings

Main Menu Tree 1st level	2nd level	3rd level	4th level	Default Value	Range	
Options	Logo	Default/User		Default		
	Logo Capture					
	Auto Source	On/Off		On		
	Input	VGA-1, VGA-2, HDMI-1, HDMI-2, Composite		Seach all source,		
	Auto Power Off (Min)			20	0~120	
	LASER Settings	LASER Hours Used (Normal)			0	infinite
		LASER Hours Used (ECO)			0	infinite
		LASER Power Mode	Normal,ECO		Normal	
	High Altitude	On/Off		Off		
	Filter Remind (Hour)	Filters Remind (Hour)			0	0 ~ 1000
		Cleaning up reminder	Yes/No		No	
	Information	Source				
		Resolution				
		Software Version				
Aspect Ration						
3D	3D	Off/On/Auto		Auto		
	3D Invert	On/Off		Off		
	3D Format	Frame Packing			Depend on input signal, If a HDMI source with AVINFO data existed then display 3D mode automatically.	
		Side-by-Side (Half)				
		Top amd Bottom				
		Frame Sequential				
	Field Sequential					
1080p @ 24	96Hz/144Hz			144Hz		

Picture



Color Mode

There are many factory presets optimized for various types of images. Use the ◀ or ▶ button to select the item.

- ▶ Bright: For brightness optimization.
- ▶ PC: For meeting presentation.
- ▶ Movie: For playing video content.
- ▶ Game: For game content.
- ▶ User: Memorize user's settings.

Wall Color

Use this function to obtain an optimized screen image according to the wall color. You can select from “White”, “Light Yellow”, “Light Blue”, “Pink”, and “Dark Green”.

Brightness

Adjust the brightness of the image.

- ▶ Press the ◀ button to darken image.
- ▶ Press the ▶ button to darken image.

Contrast

The Contrast controls the difference between the lightest and darkest parts of the picture. Adjusting the contrast changes the amount of black and white in the image.

- ▶ Press the ◀ button to decrease the contrast.
- ▶ Press the ▶ button to increase the contrast.

Sharpness

Adjust the sharpness of the image.

- ▶ Press the ◀ button to decrease the sharpness.
- ▶ Press the ▶ button to increase the sharpness.

Saturation

Adjust a video image from black and white to fully saturated color.

- ▶ Press the ◀ button to decrease the amount of saturation in the image.
- ▶ Press the ▶ button to increase the amount of saturation in the image.

Hue

Adjust the color balance of red and green.

- ▶ Press the ◀ button to increase the amount of green in the image.
- ▶ Press the ▶ button to increase the amount of red in the image.

Gamma

Adjust the gamma table when the dark areas or bright areas of the image are not clear.

- ▶ Press the ▶ to emphasize details in dark areas of the image.
- ▶ Press the ◀ to emphasize details in bright areas of the image.

Color Temp

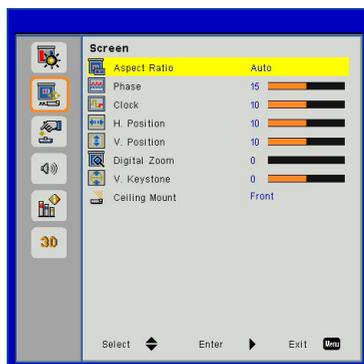
Select the color temperature. This function is only available when the "Color Mode" setting is set to "PC".

- ▶ Low: The screen image looks warmer.
- ▶ High: The screen image looks colder.



- ❖ "Sharpness", "Saturation" and "Hue" functions are only supported under video mode.

Screen



Aspect Ratio

- ▶ Auto: Keep the image with original width-height ratio and maximize the image to fit native horizontal or vertical pixels.
- ▶ 4:3: The image will be scaled to fit the screen and displayed using a 4:3 ratio.
- ▶ 16:9: The image will be scaled to fit the width of the screen and the height adjusted to display the image using a 16:9 ratio.
- ▶ 16:10: The image will be scaled to fit the width of the screen and the height adjusted to display the image using a 16:10 ratio.
- ▶ Fill Screen : The image will be scaled to fit full screen.



- ❖ “H. Position” and “V. Position” ranges will depend on input source.

Phase

Synchronize the signal timing of the display with the graphic card. If the image appears to be unstable or flickers, use this function to correct it.

Clock

Adjust to achieve an optimal image when there is a vertical flicker in the image.

H. Position

- ▶ Press the ◀ button to move the image left.
- ▶ Press the ▶ button to move the image right.

V. Position

- ▶ Press the ◀ button to move the image down.
- ▶ Press the ▶ button to move the image up.

Digital Zoom

- ▶ Press the ◀ button to reduce the size of an image.
- ▶ Press the ▶ button to magnify an image on the projection screen.

V Keystone

Press the ◀ or ▶ button to adjust image distortion vertically. If the image looks trapezoidal, this option can help make the image rectangular.

Ceiling Mount

- ▶ Front: The image is projected straight on the screen.
- ▶ Front Ceiling: This is the default selection. When selected, the image will turn upside down.
- ▶ Rear: When selected, the image will appear reversed.
- ▶ Rear Ceiling: When selected, the image will appear reversed in upside down position.

User Settings

Setting



Language

Choose the multilingual OSD menu. Press the ◀ or ▶ button into the sub menu and then use the ▲ or ▼ button to select your preferred language. Press ▶ on the remote control to finalize the selection.



Menu Location

Choose the menu location on the display screen.

Closed Caption

Use this function to enable close caption menu. Select an appropriate closed captions option: Off, CC1, CC2, CC3, and CC4.

VGA Output (Standby)

Choose "On" to enable VGA OUT connection.

VGA-2 (Function)

- ▶ Input: Choose “Input” to let the VGA port works as a VGA input function.
- ▶ Output: Choose “Output” to enable the VGA Out function once the projector is powered on.

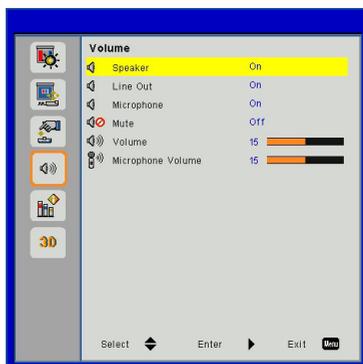
Test Pattern

Display a test pattern.

Reset

Choose “Yes” to return the parameters on all menus to the factory default settings.

Volume



Speaker

- ▶ Choose “On” to enable the speaker.
- ▶ Choose “Off” to disable the speaker.

Line Out

- ▶ Choose “On” to enable the line out function.
- ▶ Choose “Off” to disable the line out function.

Microphone

- ▶ Choose “On” to enable the microphone.
- ▶ Choose “Off” to disable the microphone.

Mute

- ▶ Choose “On” to turn mute on.
- ▶ Choose “Off” to turn mute off.

Volume

- ▶ Press the ◀ button to decrease the volume.
- ▶ Press the ▶ button to increase the volume.

Microphone Volume

- ▶ Press the ◀ button to decrease the microphone volume.
- ▶ Press the ▶ button to increase the microphone volume.

Options



- ❖ For successful logo capture, please ensure that the on-screen image does not exceed the projector's native resolution. (WXGA:1280x800).
- ❖ "Logo Capture" is not available when 3D is enabled.
- ❖ Before active this function, it is recommended that "Aspect Ratio" is set to the "Auto".

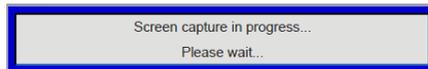
Logo

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.

- ▶ Default: The default startup screen.
- ▶ User: Use stored picture from "Logo Capture" function.

Logo Capture

Press ▶ button to capture an image of the picture currently displayed on screen.

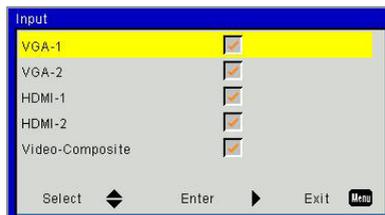


Auto Source

- ▶ On: The projector will search for other signals if the current input signal is lost.
- ▶ Off: The projector will only search current input connection.

Input

Press ▶ button to enable/disable input sources. The projector will not search for inputs that are not selected.



User Settings

Auto Power Off (Min)

Sets the countdown timer interval. 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 (in minutes).

LASER Settings

Refer to page 47.

High Altitude

- ▶ On: The built-in fans run at high speed. Select this option when using the projector at altitudes above 5000 feet/1524 meters or higher.
- ▶ Off: The built-in fans automatically run at a variable speed according to the internal temperature.

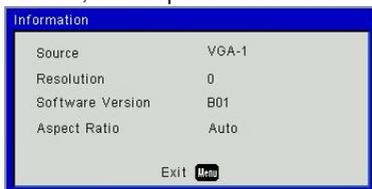
Filters Remind (Hour)

- ▶ Filters Remind (Hour): Set the filter reminder time.
- ▶ Cleaning Up Remind: Select “Yes” to reset the dust filter hour counter after replacing or cleaning the dust filter.

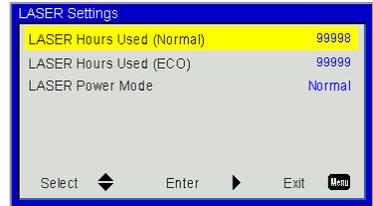


Information

Display the projector information for source, resolution, software version, and aspect ratio on the screen.



Options | LASER Settings



LASER Hours Used (Normal)

Display the projection time of normal mode.

LASER Hours Used (ECO)

Display the projection time of ECO mode.

LASER Power Mode

- ▶ Normal: Normal mode.
- ▶ ECO: Use this function to dim the projector light source which will lower power consumption and extend the light source life.

User Settings

3D



- ❖ “Frame Packing” is supported the DLP Link 3D input signals from VGA / HDMI connector.
- ❖ “Frame Sequential” / “Field Sequential” are supported the HQFS 3D input signals from Composite/S-Video connector.
- ❖ “Frame Packing” / “Side-by-Side(Half)” / “Top and Bottom” are supported from HDMI 1.4a 3D input signals.

3D

- ▶ Auto: When a HDMI 1.4a 3D timing identification signal is detected, the 3D image is selected automatically.
- ▶ Choose “On” to enable 3D function.
- ▶ Choose “Off” to disable 3D function.

3D Invert

If you see a discrete or overlapping image while wearing DLP 3D glasses, you may need to execute “Invert” to get best match of left/right image sequence to get the correct image.

3D Format

Use this feature to select the 3D format. Options are: “Frame Packing”, “Side-by-Side (Half)”, “Top and Bottom”, “Frame Sequential”, and “Field Sequential”.

1080p@24

Use this feature to select 96 or 144Hz refresh rate as using 3D glasses in the 1080p @ 24 frame packing.

Troubleshooting

If you experience trouble with the projector, refer to the following information. If the problem persists, please contact your local dealer or service center.

Problem: No image appears on screen

- ▶ Ensure all the cables and power connections are correctly and securely connected as described in the “Installation” section.
- ▶ Ensure the pins of terminals are not crooked or broken.
- ▶ Make sure you have removed the lens cap and the projector is switched on.
- ▶ Ensure that the “AV Mute” feature is not turned on.

Problem: Partial, scrolling or incorrectly displayed image

- ▶ Press “Auto Set” on the remote control.
- ▶ If you are using a Notebook:
 1. First, follow the steps above to adjust resolution of the computer.
 2. Press the toggle output settings. example: [Fn]+[F3]

PANASONIC, NEC => Fn+F3
HP, SHARP, TOSHIBA => Fn+F5
IBM, SONY => Fn+F7
DELL, EPSON => Fn+F8
FUJITSU => Fn+F10
APPLE =>F7

- ▶ If you experience difficulty changing resolutions or your monitor freezes, restart all equipment including the projector.

Problem: The screen of the Notebook or PowerBook computer is not displaying a presentation

▶ If you are using a Notebook PC:

Some Notebook PCs may deactivate their own screens when a second display device is in use. Each has a different way to be reactivated. Refer to your computer's documentation for detailed information.

Problem: Image is unstable or flickering

- ▶ Adjust the "Phase" or "Clock" to correct it. Refer to the "Screen" section for more information.
- ▶ Change the monitor setting from your computer.
- ▶ Check and reconfigure the display mode of your graphic card to make it compatible with the product.

Problem: Image is out of focus

- ▶ Adjust the Focus Ring on the projector lens.
- ▶ Make sure the projection screen is between the required distance. Please see pages 29~30.

Problem: The image is stretched when displaying 16:9 DVD

Change "Aspect" by pressing the key on remote control or OSD menu to show image with proper aspect ratio.

Problem: Image is too small or too large

- ▶ Move the projector closer to or further from the screen.
- ▶ Press "Aspect" button on the remote control or press "Menu" button on the projector panel, go to "Screen --> Aspect Ratio" and try the different settings.

Problem: Image is reversed

- ▶ Select “Screen --> Ceiling Mount” from the OSD and adjust the projection direction.

Troubleshooting

Problem: Indicator lighting message

Message	POWER indicator	TEMP indicator	LIGHT indicator
	(Red/Blue)	(Red)	(Red)
Standby (Input power cord)	 (Red)		
Normal (Power on)	 (Blue)		
Powering up (Warming up)	Flashing Red (1 sec)		
Power off (Cooling Down)	Flashing Red (0.5 sec)		
Error (Over temp. On Event)			
Error (Over temp. On Standby)			
Error (Light source failed On Event)			
Error (Light source failed On Standby)			
Error (Fan failed On Event)		Flashing 3 sec	
Error (Fan failed On Standby)		Flashing 3 sec	
Error (Color Wheel fail / Striking Light source Fail On Event)		Flashing 0.5 sec	
Error (Color Wheel fail / Striking Light source Fail On Standby)		Flashing 0.5 sec	

Note

Steady light => 
 No light => 

Problem: Message Reminders

- ▶ Over temperature - the projector has exceeded its recommended operating temperature and must be allowed to cool down before it may be used.



- ▶ Fan failed - the system fan is not working.



Maintaining the filter

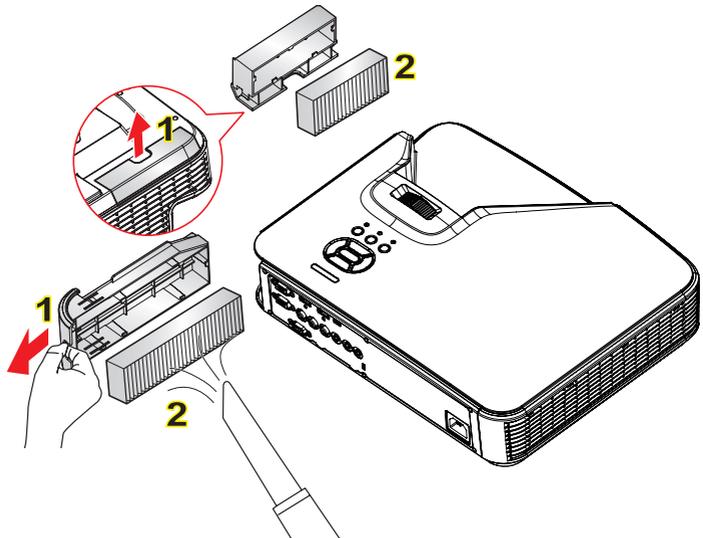
Installing and Cleaning the Optional Dust Filter

We recommend you clean the dust filter every 500 hours of operation, or more often if you are using the projector in a dusty environment.

When the warning message appears on the screen, do the following to clean the air filter:



- ❖ The optional dust filter should be used in dusty environments.
- ❖ If the dust filter is installed, a proper maintenance will prevent overheating and projector malfunction.
- ❖ The dust filter is optional.
- ❖ The specific interfaces are selected in terms of the specifications of types.



○ Air Filter Cleaning Procedure: ○

1. Switch off the power to the projector by pressing the “**⏻**” button.
2. Disconnect the power cord.
3. Pull out the dust filter, as shown in the illustration. **1**
4. Carefully remove the dust filter. Then clean or change the filter. **2**
To install the filter, reverse the previous steps.
5. Turn on the projector and reset the filter usage counter after the dust filter is replaced.

List of Compatible Signals

▶ VGA Analog

a. PC signal			
Modes	Resolution	V. Frequency [Hz]	H. Frequency [Hz]
VGA	640x480	60	31.5
	640x480	67	35.0
	640x480	72	37.9
	640x480	75	37.5
	640x480	85	43.3
	640x480	120	61.9
IBM	720x400	70	31.5
SVGA	800x600	56	35.1
	800x600	60	37.9
	800x600	72	48.1
	800x600	75	46.9
	800x600	85	53.7
	800x600	120	77.4
Apple, MAC II	832x624	75	49.1
XGA	1024x768	60	48.4
	1024x768	70	56.5
	1024x768	75	60.0
	1024x768	85	68.7
	1024x768	120	99.0
Apple, MAC II	1152x870	75	68.7
SXGA	1280x1024	60	64.0
	1280x1024	72	77.0
	1280x1024	75	80.0
QuadVGA	1280x960	60	60.0
	1280x960	75	75.2
SXGA+	1400x1050	60	65.3
UXGA	1600x1200	60	75.0

Appendices

b. Extended wide timing			
Modes	Resolution	V. Frequency [Hz]	H. Frequency [Hz]
WXGA	1280x720	60	44.8
	1280x800	60	49.6
	1366x768	60	47.7
	1440x900	60	59.9
WSXGA+	1680x1050	60	65.3
c. Component signal			
Modes	Resolution	V. Frequency [Hz]	H. Frequency [Hz]
480i	720x480 (1440x480)	59.94(29.97)	15.7
576i	720x576 (1440x576)	50(25)	15.6
480p	720x480	59.94	31.5
576p	720x576	50	31.3
720p	1280x720	60	45.0
	1280x720	50	37.5
1080i	1920x1080	60(30)	33.8
	1920x1080	50(25)	28.1
1080p	1920x1080	23.98/24	27.0
	1920x1080	60	67.5
	1920x1080	50	56.3

Appendices

► HDMI Digital

a. PC signal			
Modes	Resolution	V. Frequency [Hz]	H. Frequency [Hz]
VGA	640x480	60	31.5
	640x480	67	35.0
	640x480	72	37.9
	640x480	75	37.5
	640x480	85	43.3
	640x480	120	61.9
IBM	720x400	70	31.5
SVGA	800x600	56	35.1
	800x600	60	37.9
	800x600	72	48.1
	800x600	75	46.9
	800x600	85	53.7
	800x600	120	77.4
Apple, MAC II	832x624	75	49.1
XGA	1024x768	60	48.4
	1024x768	70	56.5
	1024x768	75	60.0
	1024x768	85	68.7
	1024x768	120	99.0
Apple, MAC II	1152x870	75	68.7
SXGA	1280x1024	60	64.0
	1280x1024	72	77.0
	1280x1024	75	80.0
QuadVGA	1280x960	60	60.0
	1280x960	75	75.2
SXGA+	1400x1050	60	65.3
UXGA	1600x1200	60	75.0

Appendices

b. Extended wide timing			
Modes	Resolution	V. Frequency [Hz]	H. Frequency [Hz]
WXGA	1280x720	60	44.8
	1280x800	60	49.6
	1366x768	60	47.7
	1440x900	60	59.9
WSXGA+	1680x1050	60	65.3
c. Video signal			
Modes	Resolution	V. Frequency [Hz]	H. Frequency [Hz]
480p	640x480	59.94/60	31.5
480i	720x480 (1440x480)	59.94(29.97)	15.7
576i	720x576 (1440x576)	50(25)	15.6
480p	720x480	59.94	31.5
576p	720x576	50	31.3
720p	1280x720	60	45.0
	1280x720	50	37.5
1080i	1920x1080	60(30)	33.8
	1920x1080	50(25)	28.1
1080p	1920x1080	23.98/24	27.0
	1920x1080	60	67.5
	1920x1080	50	56.3
d. HDMI 1.4a mandatory 3D timing- Video Signal			
Modes	Resolution	V. Frequency [Hz]	H. Frequency [Hz]
Frame Packing	720p	50	31.5
	720p	59.94/60	15.7
	1080p	23.98/24	15.6
Side-by-Side(Half)	1080i	50	31.5
	1080i	59.94/60	31.3
Top and Bottom	720p	50	45.0
	720p	59.94/60	37.5
	1080p	23.98/24	33.8

Configurations of Terminals

Terminal : Analog RGB (Mini D-sub 15 pin)



1	Red (R/Cr) Input/R Output	9	DDC 5V / NC
2	Green (G/Y) Input/G Output	10	Ground (Ver. sync.)
3	Blue (B/Cb) Input/B Output	11	ICP download
4	ICP download / NC	12	DDC Data / NC
5	Ground (Horiz.sync.)	13	Horiz. sync. Input / Output (Composite H/V sync. Input)
6	Ground (Red)		
7	Ground (Green)	14	Vert. sync. Input / Output
8	Ground (Blue)	15	DDC CLK / NC

PC Control

▶ RS232 Port Setting

Items	Method
Communication Method	Asynchronous Communication
Bits per seconds	9600
Data bits	8 bits
Parity	None
Stop bits	1
Flow control	None

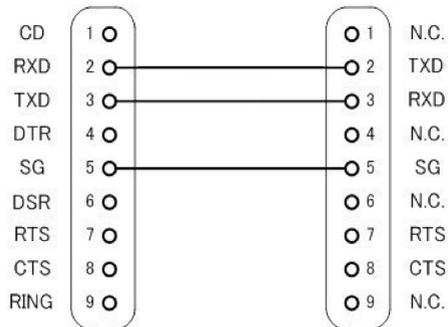


- ❖ RS232 shell is grounded.

▶ RS232 Signals Connection

Computer COM Port
(D-Sub 9pin connector)

Projector COM Port
(D-Sub 9pin connector)



Specifications

■ List of general specifications

Item	Specification	
Consumption Power	210W (ECO mode) / 330W (Full mode)	
Weight	5.5kg(12.2lb)	
Dimensions (WxHxD)	383 x 85 x 308 mm	
Environmental Considerations	Operational Temperatures : 41° to 104°F (5° to 40°C), 20% to 80% humidity (non-condensing) Storage Temperatures : -4° to 140°F (-20° to 60°C), 20% to 80% humidity (non-condensing)	
Projection System	DLP 0.55" chip (XGA) / DLP 0.65" chip (WXGA)	
Resolution	RICOH PJ XL4540/LX3000ST Series 1024 x 768pixels (XGA) RICOH PJ WXL4540/LW3000ST Series 1280 x 800pixels (WXGA)	
Lens	F# 2.7 , f = 7.15mm	
Light Source	3.5W Laser x 19pcs	
Light Source Life	10000H(Normal)/20000H(Eco)	
Projection screen size	56.4 - 100 inch(XGA), 69.4 - 100 inch (WXGA)	
Projection distance	71 - 125 cm (XGA), 78 - 112 cm (WXGA) (Focus range)	
Speaker	10W (Mono)	
Connection terminal	Computer In terminal	Mini D sub 15 pin RGB / Y/P _B / P _R (dual use)
	Monitor Out terminal	Mini D sub 15 pin
	HDMI 1/2 In terminal	HDMI type A connector
	Video In terminal	RCA Jack for Composite Video Input
	Audio In terminal	Two RCA audio jacks for audio input
	Audio In terminal	3.5 mm diameter mini-jack for COMPUTER
	Audio In (Microphone)	3.5 mm diameter mini-jack for Microphone Input
	Audio Out terminal	3.5 mm diameter mini-jack
Computer compatibility	IBM PC Compatible, support HDTV (1080i/p, 720p, 576i/p, 480i/p) include both PC and componet inputs	
Video compatibility	NTSC M(3.58MHz), 4.43MHz PAL (B, D, G, H, I, M, N), 4.43MHz SECAM (B, D, G, K, K1, L), 4.25/4.4MHz HDTV 720p (50/60Hz), 1080i/p (50/60Hz), 1080p (24/25/30/50/60Hz) SDTV 480i/p, 576i/p	
Horizontal scan rate	15 KHz to 91.1 KHz	
Vertiacal scan rate	24 Hz to 85 Hz	
Keystone correction	V: +/-10 degrees	

Appendices

Note

- This model complies with the above specifications.
- Designs and specifications are subject to change without notice.
- This model may not be compatible with features and/or specifications that may be added in the future.

Ceiling Mount Installation

If you want to use a third-party ceiling mount kit, please ensure the screw used to attach the mount to the projector meet the following specifications:

- ▶ Screw type: M4*4
- ▶ Minimum screw length: 10mm

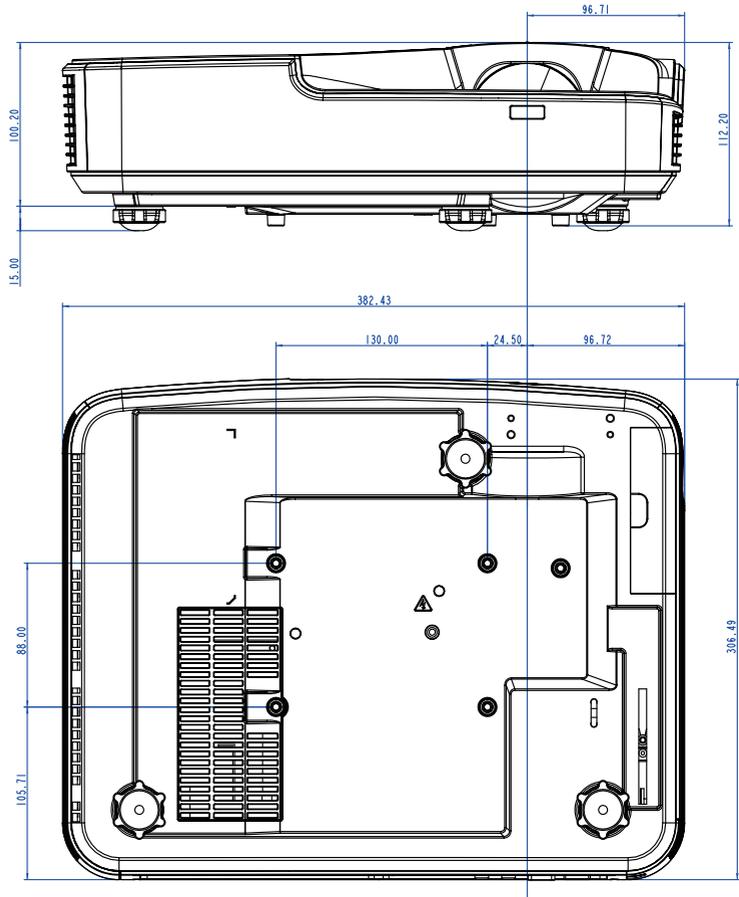


❖ Damages resulting from incorrect installation are not covered under warranty.



 Warning:

1. If you buy a ceiling mount from other companies, please be sure to use the correct screw size. Screw size will vary according to the thickness of the mounting plates.
2. Be sure to keep a gap of at least 10 cm between the ceiling and the bottom of the projector.
3. Avoid installing the projector near a heat source.



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