

**NEC**

*Projector*

***U321H***

---

*User's Manual*

Model No.  
NP-U321H

**ProSelecta**

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## NOTES

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- (2) The contents of this user's manual are subject to change without notice.
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- (4) Notwithstanding article (3), NEC will not be responsible for any claims on loss of profit or other matters deemed to result from using the Projector.

# Important Information

## Safety Cautions

### Precautions

Please read this manual carefully before using your NEC projector and keep the manual handy for future reference.

#### CAUTION



To turn off main power, be sure to remove the plug from power outlet. The power outlet socket should be installed as near to the equipment as possible, and should be easily accessible.

#### CAUTION



TO PREVENT SHOCK, DO NOT OPEN THE CABINET. THERE ARE HIGH-VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol warns the user that uninsulated voltage within the unit may be sufficient to cause electrical shock. Therefore, it is dangerous to make any kind of contact with any part inside of the unit.



This symbol alerts the user that important information concerning the operation and maintenance of this unit has been provided. The information should be read carefully to avoid problems.

**WARNING:** TO PREVENT FIRE OR SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. DO NOT USE THIS UNIT'S PLUG WITH AN EXTENSION CORD OR IN AN OUTLET UNLESS ALL THE PRONGS CAN BE FULLY INSERTED.

### DOC Compliance Notice (for Canada only)

This Class B digital apparatus complies with Canadian ICES-003.

### Machine Noise Information Regulation - 3. GPSGV,

The highest sound pressure level is less than 70 dB (A) in accordance with EN ISO 7779.

### Disposing of your used product



EU-wide legislation as implemented in each Member State requires that used electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes projectors and their electrical accessories or lamps. When you dispose of such products, please follow the guidance of your local authority and/or ask the shop where you purchased the product.

After collecting the used products, they are reused and recycled in a proper way. This effort will help us reduce the wastes as well as the negative impact such as mercury contained in a lamp to the human health and the environment at the minimum level. The mark on the electrical and electronic products only applies to the current European Union Member States.

#### WARNING TO CALIFORNIA RESIDENTS:

Handling the cables supplied with this product will expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm. **WASH HANDS AFTER HANDLING.**

## RF Interference (for USA only)

### WARNING

The Federal Communications Commission does not allow any modifications or changes to the unit EXCEPT those specified by NEC Display Solutions of America, Inc. in this manual. Failure to comply with this government regulation could void your right to operate this equipment. This equipment 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 equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment 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 equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

For UK only: In UK, a BS approved power cord with moulded plug has a Black (five Amps) fuse installed for use with this equipment. If a power cord is not supplied with this equipment please contact your supplier.

### Important Safeguards

These safety instructions are to ensure the long life of your projector and to prevent fire and shock. Please read them carefully and heed all warnings.

#### Installation

- Do not place the projector in the following conditions:
  - on an unstable cart, stand, or table.
  - near water, baths, or damp rooms.
  - in direct sunlight, near heaters, or heat radiating appliances.
  - in a dusty, smoky or steamy environment.
  - on a sheet of paper, cloth, rugs, carpets, or any objects which are damaged or affected by heat.
- If you wish to have the projector installed on the ceiling:
  - Do not attempt to install the projector yourself.
  - The projector must be installed by qualified technicians in order to ensure proper operation and reduce the risk of bodily injury.
  - In addition, the ceiling must be strong enough to support the projector and the installation must be in accordance with any local building codes.
  - Please consult your dealer for more information.

### WARNING

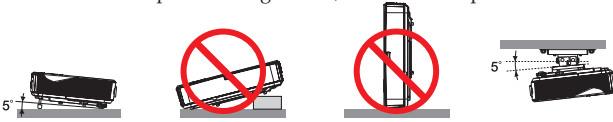


- Do not place any objects, which are easily affected by heat, in front of the projector lens. Doing so could lead to the object melting from the heat that is emitted from the light output.

This device is not intended for use in the direct field of view at visual display workplaces. To avoid incomming reflections at visual display workplaces this device must not be placed in the direct field of view.

### Place the projector in a horizontal position

The tilt angle of the projector should not exceed 5 degrees, nor should the projector be installed in any way other than the desktop and ceiling mount, otherwise lamp life could decrease dramatically.

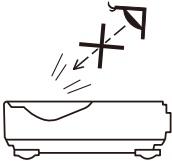


### ⚠ Fire and Shock Precautions ⚠

- Ensure that there is sufficient ventilation and that vents are unobstructed to prevent the build-up of heat inside your projector. Allow at least 4 inches (10cm) of space between your projector and a wall.
- Do not try to touch the exhaust vent as it can become heated while the projector is turned on and immediately after the projector is turned off.



- Prevent foreign objects such as paper clips and bits of paper from falling into your projector. Do not attempt to retrieve any objects that might fall into your projector. Do not insert any metal objects such as a wire or screwdriver into your projector. If something should fall into your projector, disconnect it immediately and have the object removed by a qualified service personnel.
- Do not place any objects on top of the projector.
- Do not touch the power plug during a thunderstorm. Doing so can cause electrical shock or fire.
- The projector is designed to operate on a power supply of 100-240V AC 50/60 Hz. Ensure that your power supply fits this requirement before attempting to use your projector.
- Do not look into the lens while the projector is on. Serious damage to your eyes could result.



- Keep any items (magnifying glass etc.) out of the light path of the projector. The light path being projected from the lamp is extensive, therefore any kind of abnormal objects that can redirect light coming out of the lamp, can cause unpredictable outcome such as a fire or injury to the eyes.
- Do not block the light path between the light source and the lamp with any objects. Doing so could cause the object to catch on fire.
- Do not place any objects, which are easily affected by heat, in front of the projector lamp or a projector exhaust vent. Doing so could lead to the object melting or getting your hands burned from the heat that is emitted from the light output and exhaust.
- Do not use a spray containing flammable gas to get rid of accumulated dust and dirt on the aspherical mirror or lens.
- Handle the power cord carefully. A damaged or frayed power cord can cause electric shock or fire.
  - Do not use any power cord other than the one supplied.
  - Do not bend or tug the power cord excessively.
  - Do not place the power cord under the projector, or any heavy object.
  - Do not cover the power cord with other soft materials such as rugs.
  - Do not heat the power cord.
  - Do not handle the power plug with wet hands.

- Turn off the projector, unplug the power cord and have the projector serviced by a qualified service personnel under the following conditions:
  - When the power cord or plug is damaged or frayed.
  - If liquid has been spilled into the projector, or if it has been exposed to rain or water.
  - If the projector does not operate normally when you follow the instructions described in this user's manual.
  - If the projector has been dropped or the cabinet has been damaged.
  - If the projector exhibits a distinct change in performance, indicating a need for service.
- Disconnect the power cord and any other cables before carrying the projector.
- Turn off the projector and unplug the power cord before cleaning the cabinet or replacing the lamp.
- Turn off the projector and unplug the power cord if the projector is not to be used for an extended period of time.
- When using a LAN cable:  
For safety, do not connect to the connector for peripheral device wiring that might have excessive voltage.

### Remote Control Precautions

- Handle the remote control carefully.
- If the remote control gets wet, wipe it dry immediately.
- Avoid excessive heat and humidity.
- Do not short, heat, or take apart batteries.
- Do not throw batteries into fire.
- If you will not be using the remote control for a long time, remove the batteries.
- Ensure that you have the batteries' polarity (+/-) aligned correctly.
- Do not use new and old batteries together, or use different types of batteries together.
- Dispose of used batteries according to your local regulations.

### Lamp Replacement

- Use the specified lamp for safety and performance.
- To replace the lamp, follow all instructions provided on pages 56-57.
- Be sure to replace the lamp when the message [LAMP LIFE IS ABOVE LIMIT TIME. LAMP OFF] appears. If you continue to use the lamp after the lamp has reached the end of its usable life, the lamp bulb may shatter, and pieces of glass may be scattered in the lamp case. Do not touch them as the pieces of glass may cause injury.  
If this happens, contact your dealer for lamp replacement.

#### A Lamp Characteristic

The projector has a discharge lamp for special purposes as a light source. A lamp has a characteristic that its brightness gradually decreases with age. Also repeatedly turning the lamp on and off will increase the possibility of its lower brightness.

#### CAUTION:

- DO NOT TOUCH THE LAMP immediately after it has been used. It will be extremely hot. Turn the projector off and then disconnect the power cord. Allow at least one hour for the lamp to cool before handling.
- When removing the lamp from a ceiling-mounted projector, make sure that no one is under the projector. Glass fragments could fall if the lamp has been burned out.

#### Note for US Residents

The lamp in this product contains mercury. Please dispose according to Local, State or Federal Laws.

### Health precautions to users viewing 3D images

- Before viewing, be sure to read health care precautions that may be found in the user's manual included with your LCD shutter eyeglasses or your 3D compatible content such as DVDs, video games, computer's video files and the like.  
To avoid any adverse symptoms, heed the following:
  - Do not use LCD shutter eyeglasses for viewing any material other than 3D images.
  - Allow a distance of 2 m/7 feet or greater between the screen and a user. Viewing 3D images from too close a distance can strain your eyes.
  - Avoid viewing 3D images for a prolonged period of time. Take a break of 15 minutes or longer after every hour of viewing.
  - If you or any member of your family has a history of light-sensitive seizures, consult a doctor before viewing 3D images.
  - While viewing 3D images, if you get sick such as nausea, dizziness, queasiness, headache, eyestrain, blurry vision, convulsions, and numbness, stop viewing them. If symptoms still persist, consult a doctor.

### About High Altitude mode

- Set [FAN MODE] to [HIGH ALTITUDE] when using the projector at altitudes approximately 2500 feet/760 meters or higher.
- Using the projector at altitudes approximately 2500 feet/760 meters or higher without setting to [HIGH ALTITUDE] can cause the projector to overheat and the projector could shut down. If this happens, wait a couple minutes and turn on the projector.
- Using the projector at altitudes less than approximately 2500 feet/760 meters and setting to [HIGH ALTITUDE] can cause the lamp to overcool, causing the image to flicker. Switch [FAN MODE] to [AUTO].
- Using the projector at altitudes approximately 2500 feet/760 meters or higher can shorten the life of optical components such as the lamp.

### About Copyright of original projected pictures:

Please note that using this projector for the purpose of commercial gain or the attraction of public attention in a venue such as a coffee shop or hotel and employing compression or expansion of the screen image with the following functions may raise concern about the infringement of copyrights which are protected by copyright law. [ASPECT RATIO], [KEYSTONE], Magnifying feature and other similar features.

### [NOTE] Power management function

The projector has power management functions.

To reduce power consumption, the power management functions (1 and 2) are factory-preset in the following way. To control the projector via a LAN or serial cable connection, use the on-screen menu to change the settings for 1 and 2.

#### 1. STANDBY MODE (Factory preset: NORMAL)

To control the projector from an external device, select [NETWORK STANDBY] for [STANDBY MODE]. When [NORMAL] is selected for [STANDBY MODE], the following connectors and functions will not work:

- PC CONTROL connector, MONITOR OUT connector, AUDIO OUT connector, LAN functions, Mail Alert function

#### 2. AUTO POWER OFF (Factory default: 60 minutes)

To control the projector from an external device, select [0] for [AUTO POWER OFF (MIN)].

-When [60] is selected for [AUTO POWER OFF], you can enable the projector to automatically turn off in 60 minutes if there is no signal received by any input or if no operation is performed.

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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 projector will detect the life of the lamp itself. Please be sure to change the lamp when it shows warning messages.
- Warning- Reset the "CLEAR LAMP HOURS" function from the on-screen display "OPTIONS | LAMP/FILTER SETTINGS" menu after replacing the lamp module (refer to page 47).
- Warning- When switching the projector off, please ensure the cooling cycle has been completed before disconnecting power.
- Warning- Turn on the projector first and then the signal sources.
- Warning- When the lamp reaches the end of its life, it will burn out and may make a loud popping sound. If this happens, the projector will not turn back on until the lamp module has been replaced. To replace the lamp, follow the procedures listed under "Replacing the Lamp".

Turkish RoHS information relevant for Turkish market  
EEE Yönetmeliğine Uygundur.

High gain type screens are not optimal for use with this projector. The lower the screen gain (i.e., screen gain on the order of 1), the better the appearance of the projected image.

# Usage Notice

## ***Do:***

- 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.
- If the lens is soiled, use a commercially available cleaning cloth for lens.

## ***Do not:***

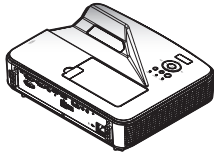
- Use abrasive cleaners, waxes or solvents to clean the unit.
- Use under the following conditions:
  - Extremely heat, cold or humidity.
  - In areas susceptible to excessive dust and dirt.
  - In direct sunlight.
  - Outdoors
  - Move the projector by holding the cable cover.
  - Hang from the projector in a ceiling or wall mounted installation.
  - Apply excessively strong pressure against the lens.
  - Keep finger prints off the lens surface.
- Install and store in the following conditions:
  - In powerful magnetic fields.
  - In corrosive gas environment.

## Product Features

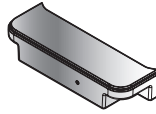
- **High resolution**  
Full HD (1920 × 1080) support.
- **0.5 W in standby condition with energy saving technology**  
Selecting [NORMAL] for [STANDBY MODE] from the menu can put the projector in power-saving mode that consumes only 0.5 W (typical value).
- **Two HDMI input ports provide digital signal**  
The two HDMI inputs provide HDCP compatible digital signals. The HDMI input
- **Quick Power Off, Direct Power Off**  
The projector can be put away immediately after the projector is powered on. No cool down period is required after the projector is turned off from the remote control or cabinet control panel.  
The projector has a feature called "Direct Power Off". This feature allows the projector to be turned off (even when projecting an image) by using the Main Power Switch or disconnecting the AC power supply. To turn off the AC power supply when the projector is powered on, use a power strip equipped with a switch and a breaker.
- **8 W speaker for an integrated audio solution**  
Powerful 8 watt stereo speakers provide volume need for large rooms.
- **3D features supported**  
The projector can support following format by DLP® Link.
  - HDMI 3D
  - HQFS 3D
- **Integrated RJ-45 connector for wired networking capability**  
The customer can control the projector by own computer via Wired LAN.
- **Preventing unauthorized use of the projector**  
Enhanced smart security settings for keyword protection, cabinet control panel lock, security slot, and security chain opening to help prevent unauthorized access, adjustments and theft deterrence.

## Package Overview

*This projector comes with all the items shown below. Check to make sure your unit is completed. Contact your dealer immediately if anything is missing.*



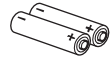
Projector



Cable Cover  
(P/N:79TCP141)



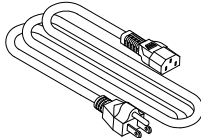
Remote Control  
(P/N:7N901052)



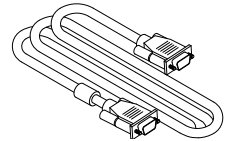
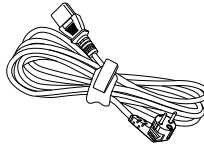
Batteries (AAAx2)

US (P/N:79TC3011)

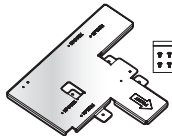
EU (P/N:79TC3021)



Power Cord x1



Computer Cable (VGA)  
(P/N:7N520087)



Attachment Plate  
(P/N: 79TCP151)



Security Label



❖ Due to the difference in applications for each country, some regions may have different accessories.

### Documentation:

- NEC Projector CD-ROM  
(P/N: 7N952121)
- Quick Setup Guide  
(P/N: 7N8N5461)

- Important Information (For North America: 7N8N5471)  
(For Other countries than North America: 7N8N5471 and 7N8N5481)

### For North America:

- Limited Warranty

### For Europe:

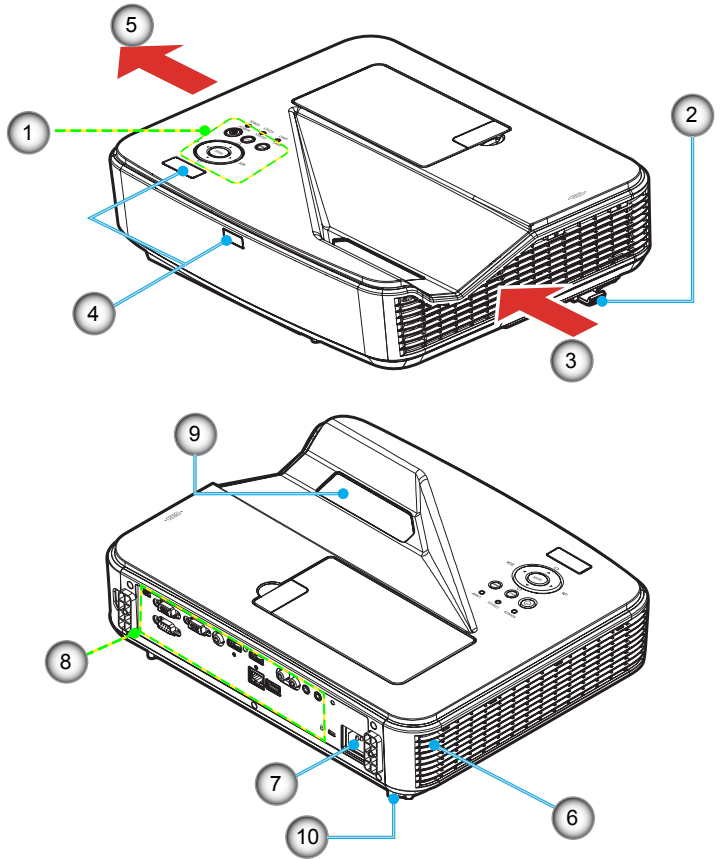
- Guarantee Policy

For customers in Europe: You will find our current valid Guarantee Policy on our Web Site: [www.nec-display-solutions.com](http://www.nec-display-solutions.com)

# Introduction

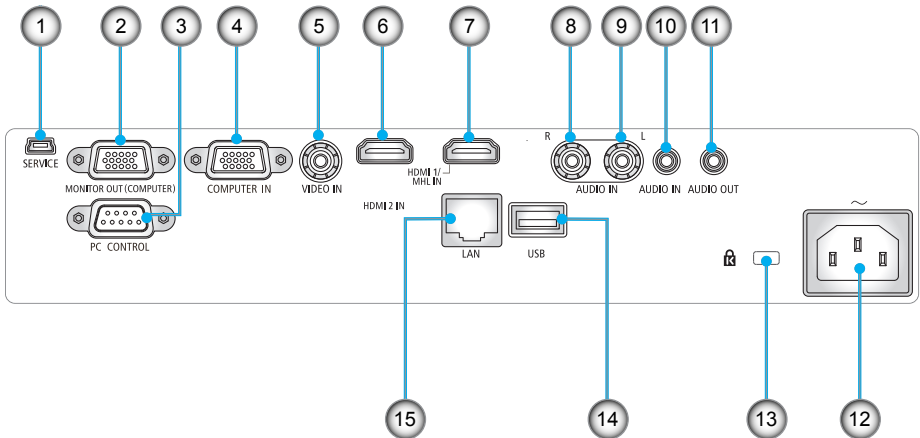
## Product Overview


### Projector



- |                          |                               |
|--------------------------|-------------------------------|
| 1. Control Panel         | 6. Speaker                    |
| 2. Focus Lever           | 7. AC IN terminal             |
| 3. Intake vent           | 8. Input / Output Connections |
| 4. Remote Control Sensor | 9. Cover Glass                |
| 5. Exhaust vent          | 10. Tilt foot                 |

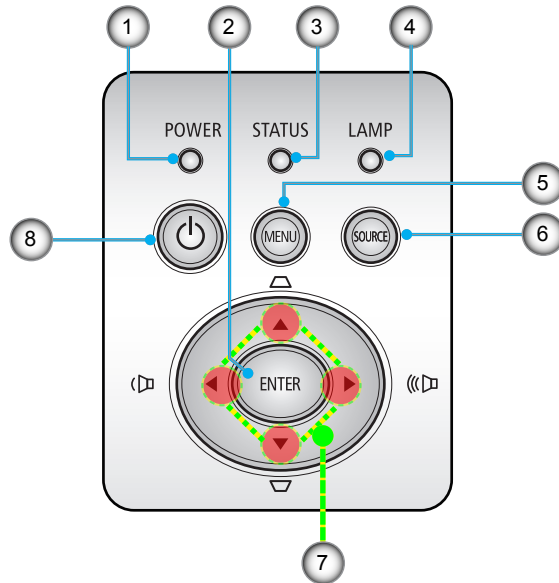
## Connection Ports





1. SERVICE Port (for service purpose only)
2. MONITOR OUT Connector (Separate sync signal only)
3. PC CONTROL Connector
4. COMPUTER IN Connector
5. VIDEO IN Connector
6. HDMI 2 IN Connector
7. HDMI 1/MHL IN Connector
8. AUDIO IN R Connector
9. AUDIO IN L Connector
10. AUDIO IN Jack (3.5mm mini jack)
11. AUDIO OUT Jack (3.5mm mini Jack)
12. AC IN Terminal
13. Kensington™ Lock  Port
14. USB TYPE A Connector
15. LAN Connector (RJ-45)

# Introduction

## Control Panel

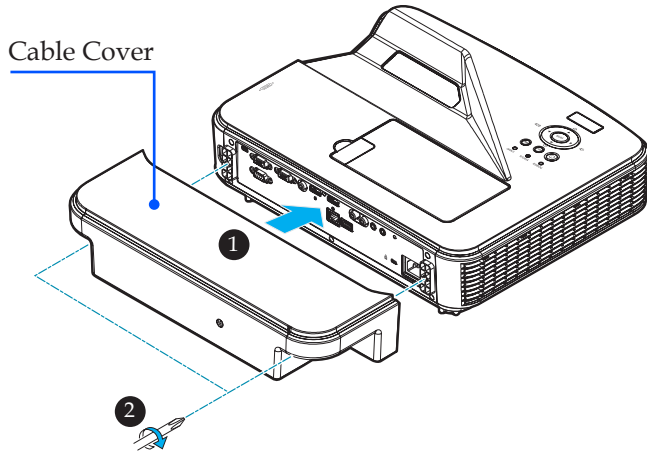


1	POWER LED	Indicate the projector's status.
2	ENTER	Confirm your section of items in sub menu operation.
3	STATUS LED	Indicate the projector's temperature status.
4	LAMP LED	Indicate the projector's lamp status.
5	MENU	Press "MENU" to launch the On-screen display (OSD), back to the top level of OSD for the OSD main menu operation
6	SOURCE	Press "SOURCE" to select an input signal.
7	 Four Directional Select Keys	Use ▲ or ▼ or ◀ or ▶ to select items or make adjustments to your selection.
8	 POWER	Turn the projector on/off. Refer to the "Power On/Off the Projector" section on pages 22-23.

## Attaching the Cable Cover

### ⚠ CAUTION:

- Be sure to tighten the screws after attaching the cable cover. Failure to do so may cause the cable cover to come off and fall, resulting in injury or damage to the cable cover.
- Do not put bundled cables in the cable cover. Failure to do so may damage the power cord, resulting in a fire.



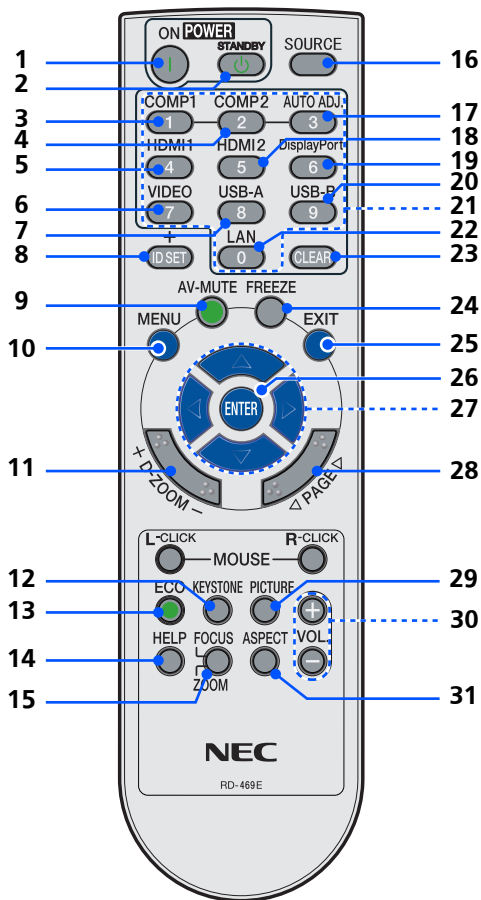
### Procedure for Attaching the Cable Cover:


1. Mount the cable cover to the projector. ①
2. Tighten two screws on both sides of the cable cover. ②



# Introduction

## Remote Control




- 
- |       |  |  |
|-------|--|--|
| 1     |  POWER ON | Power on the projector. Refer to the "Power On/Off the Projector" section on pages 22-23.  |
| <hr/> |  |  |
| 2     | POWER OFF  | Power off the projector. Refer to the "Power On/Off the Projector" section on pages 22-23. |
-

# Introduction

3	COMPUTER 1	Press "1" to choose Computer IN connector.
4	COMPUTER 2	No function.
5	HDMI 1	Press "4" to choose HDMI 1/ MHL IN connector.
6	VIDEO	Press "VIDEO" to choose VIDEO IN connector.
7	USB A	No function.
8	ID SET	No function.
9	AV-MUTE	Momentarily turn off/on the audio and video.
10	MENU	Press "MENU" to launch the Onscreen display (OSD), back to the top level of OSD for the OSD main menu operation
11	D-ZOOM	Zoom in/out the projected image.
12	KEYSTONE Correction	Adjust the image to compensate for distortion caused by tilting the projector (vertical $\pm 5$ degrees).
13	ECO	Dim the projector lamp which will lower power consumption and extend the lamp life. (refer to page 47)
14	HELP	This function ensures easy setup and operation.
15	FOCUS/ ZOOM	No function.
16	SOURCE	Press "SOURCE" to select the desired input source.
17	AUTO ADJ.	Automatically synchronize the projector to the input source.

# Introduction

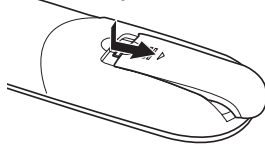
18	HDMI 2	Press “5” to choose HDMI 2 IN connector.
19	DISPLAY PORT	No function.
20	USB B	No function.
21	Number Button	No function.
22	LAN	No function.
23	CLEAR	Clear the password while you input the password.
24	FREEZE	Freeze To pause the screen image. Press again to resume the screen image.
25	EXIT	Exit the settings.
26	ENTER	Confirm your section of items in sub menu operation.
27	 Four Directional Select Buttons	Use ▲, ▼, ◀ or ▶ to select items or make adjustments to your selection. When the image is magnified by using the D-ZOOM + button, the ▲, ▼, ◀ or ▶ button moves the image.
28	PAGE	No function.
29	PICTURE Mode	Select the Picture mode from PRESENTATION, HIGH-BRIGHT, VIDEO, MOVIE, sRGB, BLACKBOARD, DICOM SIM., USER1, and USER2.
30	VOL. +/-	Increase/decrease speaker volume.
31	ASPECT	Use this function to choose your desired aspect ratio. (refer to page 35)



❖ When the demagnified image is displayed, the ▲, ▼, ◀ or ▶ button is not available to move the image.

## Battery Installation

1. Press firmly and slide the battery cover off.

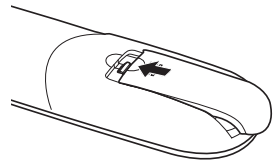
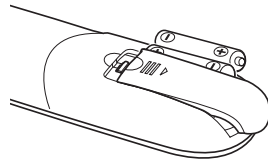


2. Install new batteries (AAA). Ensure that you have the batteries' polarity (+/-) aligned correctly.
3. Slip the cover back over the batteries until it snaps into place. Do not mix different types of batteries or new and old batteries.



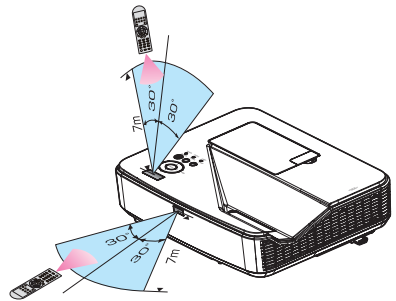
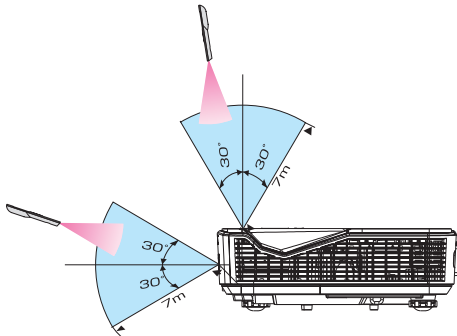
❖ The infrared signal operates by line-of-sight up to a distance of about 22 feet/7 m and within a 60-degree angle of the remote sensor on the projector cabinet.

❖ The projector will not respond if there are objects between the remote control and the sensor, or if strong light falls on the sensor. Weak batteries will also prevent the remote control from properly operating the projector.



### Remote Control Precautions

- Handle the remote control carefully.
- If the remote control gets wet, wipe it dry immediately.
- Avoid excessive heat and humidity.
- Do not place the battery upside down.
- Replace only with the same or equivalent type recommended by the manufacturer.
- Dispose of used batteries according to your local regulations.



# Introduction

## Controlling the Projector over a LAN (PC Control Utility Pro 4 for Windows/PC Control Utility Pro 5 for Mac OS)

[Using on Windows]

Using the utility software “PC Control Utility Pro 4” that you can download from our web site (<http://www.nec-display.com/dl/en/index.html>), the projector can be controlled from a computer over a LAN.

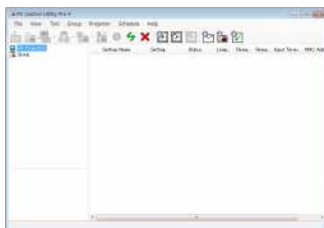


❖ When the projector is in the standby condition, the Error Alert function of PC Control Utility Pro4 is not available.

To make this function available even in the standby condition, use the E-Mail Alert function of the projector.

Control Functions

Power On/Off, signal selection, picture freeze, picture mute, audio mute, adjusting, error message notification, event schedule.



### Screen of PC Control Utility Pro 4

This section provides an outline of preparation for use of PC Control Utility Pro 4. For information on how to use PC Control Utility Pro 4, see Help of PC Control Utility Pro 4. (see page 16)

- Step 1: Install PC Control Utility Pro 4 on the computer. (see page 15)
- Step 2: Connect the projector to a LAN. (see page 16)
- Step 3: Start PC Control Utility Pro 4. (see page 16)

#### TIP:

- PC Control Utility Pro 4 can be used with a serial connection.
- For update information on PC Control Utility Pro 4, visit our website: <http://www.nec-display.com/dl/en/index.html>

# Introduction

Step 1: Install PC Control Utility Pro 4 on the computer

- Supported OS - PC Control Utility Pro 4 will run on the following operating systems.

Windows 8 \*1, Windows 8 Pro \*1, Windows 8 Enterprise \*1,  
Windows 7 Home Basic, Windows 7 Home Premium, Windows 7  
Professional, Windows 7 Enterprise, Windows 7 Ultimate  
Windows Vista Home Basic, Windows Vista Home Premium, Windows  
Vista Business, Windows Vista Enterprise, Windows Vista Ultimate  
Windows XP Home Edition \*1, Windows XP Professional \*1



❖ To install or uninstall the program, the Windows user account must have [Administrator] privilege (Windows 8, Windows 7, and Windows Vista)

❖ Exit all running programs before installation. If another program is running, the installation may not be completed.

\*1: To run PC Control Utility Pro 4, "Microsoft .NET Framework Version 2.0" is required. The Microsoft .NET Framework Version is available from Microsoft's web page. Install the Microsoft .NET Framework Version 2.0, 3.0 or 3.5 on your computer.

1 Connect your computer to the Internet and download the updated PCCUP4 exe file from our web site (<http://www.nec-display.com/dl/en/index.html>).

2 Double-click the PCCUP4. exe icon.

The Installer will start and the Wizard screen will appear.



3 Click "Next".

"END USER LICENSE AGREEMENT" screen will be displayed.



# Introduction



❖ For the Schedule function of the PC Control utility Pro 4 to work, you must have your computer running and not in standby/sleep mode. Select “Power Options” from the “Control Panel” in Windows and disable its standby/sleep mode before running the scheduler.

[Example] For Windows 7:

Select “Control Panel” -> “System and Security” -> “Power Options” -> “Change when the computer sleeps” -> “Put the computer to sleep” -> “Never”.

❖ When “NORMAL” is selected for “Standby Mode” from the menu, the projector cannot be controlled via the serial cable or network (wired LAN) connection.

❖ The projector does not support the LAN automatic search feature of PC Control Utility Pro 4. To connect the projector, register an IP address manually.

Read “END USER LICENSE AGREEMENT” carefully.

4 If you agree, click “I accept the terms in the license agreement” and then click “Next”.

Follow the instructions on the installer screens to complete the installation.

## **TIP: Uninstalling PC Control Utility Pro 4**

- To uninstall PC Control Utility Pro 4, do the same procedures stated as in “Uninstalling Virtual Remote Tool”. Read “Virtual Remote Tool” as “PC Control Utility Pro 4”

Step 2: Connect the projector to a LAN

Connect the projector to the LAN by following the instructions in “Connecting the Projector” on page 21 and “How to use web browser to control your projector” in pages 46-47.

Step 3: Start PC Control Utility Pro 4

Click “Start” -> “All programs” or “Programs” -> “NEC Projector User Supportware” -> “PC Control Utility Pro 4” -> “PC Control Utility Pro 4”.

## **TIP: Viewing the Help of PC Control Utility Pro 4**

- Displaying the Help file of PC Control Utility Pro 4 while it is running.  
Click “Help (H)” -> “Help (H)” of window of PC Control Utility Pro 4 in this order.  
The pop-up menu will be displayed.
- Displaying the help file using the Start Menu.  
Click “Start” -> “All programs” or “Programs” -> “NEC Projector User Supportware” -> “PC Control Utility Pro 4” -> “PC Control Utility Pro 4 Help”.  
The Help screen will be displayed.

## **PC Control Utility Pro 5 for Mac OS**

Step 1: Install PC Control Utility Pro 5 on the computer

- 1 Connect your computer to the Internet and visit our website (<http://www.nec-display.com/dl/en/index.html>).
- 2 Download the updated PC Control Utility Pro 5 from our website.
- 3 In Finder, control-click (“control” + click) or right click the PC Control Utility Pro 5.mpkg.
- 4 Select “Open” from the top of contextual menu that appears.

5 Click "Open" in the dialog box. If prompted, enter an administrator name and password.

The installer will start.

6 Click "Next".

"END USER LICENSE AGREEMENT" screen will be displayed.

7 Read "END USER LICENSE AGREEMENT" and click "Next".

The confirmation window will be displayed.

8 Click "I accept the terms in the license agreement".

Follow the instructions on the installer screens to complete the installation.

**Step 2: Connect the projector to a LAN**

Connect the projector to the LAN by following the instructions in "Connecting the Projector" (see page 19)

**Step 3: Start PC Control Utility Pro 5**

1. Open your Applications folder in Mac OS.

2. Click the "PC Control Utility Pro 5" folder.

3. Click the "PC Control Utility Pro 5" icon.

PC Control Utility Pro 5 will start.



❖ For the Schedule function of the PC Control utility Pro 5 to work, you must have your computer running and not in sleep mode. Select "Energy Saver" from the "System Preferences" in Mac and disable its sleep mode before running the scheduler.

❖ When [NORMAL] is selected for [STANDBY MODE] from the menu, the projector cannot be turned on via the network.

#### **TIP: Viewing the Help of PC Control Utility Pro 5**

- Displaying the Help file of PC Control Utility Pro 5 while it is running.
- From the menu bar, click "Help" → "Help" in this order.

The Help screen will be displayed

- Displaying the Help using the Dock
  1. Open "Application Folder" in Mac OS.
  2. Click the "PC Control Utility Pro 5" folder.
  3. Click the "PC Control Utility Pro 5 Help" icon.

The Help screen will be displayed.

#### **TIP: Uninstalling a software program**

1. Put the "PC Control Utility Pro 5" folder to the Trash icon.
2. Put the configuration file of PC Control Utility Pro 5 to the Trash icon.
  - The configuration file of PC Control Utility Pro 5 is located in "/Users/<your user name>/Application Data/NEC Projector User Supportware/PC Control Utility Pro 5".



## Viewing 3D Images

The projector provides 3D images to a user wearing commercially available LCD shutter eyeglasses.

### CAUTION

#### Health precautions

Before viewing, be sure to read health care precautions that may be found in the user's manual included with your LCD shutter eyeglasses or your 3D compatible content such as DVDs, video games, computer's video files and the like.

To avoid any adverse symptoms, heed the following:

- Do not use LCD shutter eyeglasses for viewing any material other than 3D images.

- Allow a distance of 2 m/7 feet or greater between the screen and a user.

Viewing 3D images from too close a distance can strain your eyes.

Avoid viewing 3D images for a prolonged period of time. Take a break of 15 minutes or longer after every hour of viewing.

- If you or any member of your family has a history of light-sensitive seizures, consult a doctor before viewing 3D images.

- While viewing 3D images, if you get sick such as nausea, dizziness, queasiness, headache, eyestrain, blurry vision, convulsions, and numbness, stop viewing them. If symptoms still persist, consult a doctor.

- View 3D images from the front of the screen. Viewing from an angle may cause fatigue or eyestrain.

#### LCD shutter eyeglasses

- Use commercially available 3D eyeglasses which meet the following requirements:

- DLP® Link compatible

- Support vertical refresh rate up to 144 Hz.

#### Steps for viewing 3D images on the projector

1. Connect the projector to your video equipment.

2. Turn on the projector, display the on-screen menu.

3. Select [3D SETTINGS] from [SCREEN] tab and then select [ON] for [3D].

- Set for [3D INVERT] and [3D STRUCTURE] as necessary. (see page 36)

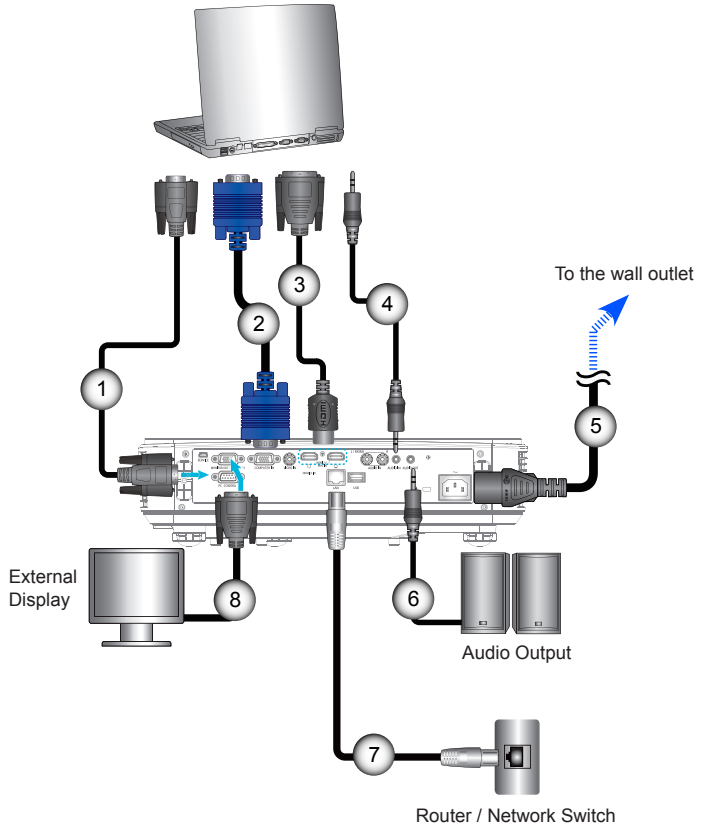
4. Play your 3D compatible content and use the projector to display the image.

5. Put on your LCD shutter eyeglasses to view 3D images.

Also refer to the user's manual accompanied with your LCD shutter eyeglasses for more information.

## Connecting the Projector

### Connect to Computer/Notebook



#### NOTE

❖ Make sure that the power plug is fully inserted into both the projector AC IN terminal and the wall outlet.

❖ The MONITOR OUT connector supports Separate sync signal only.

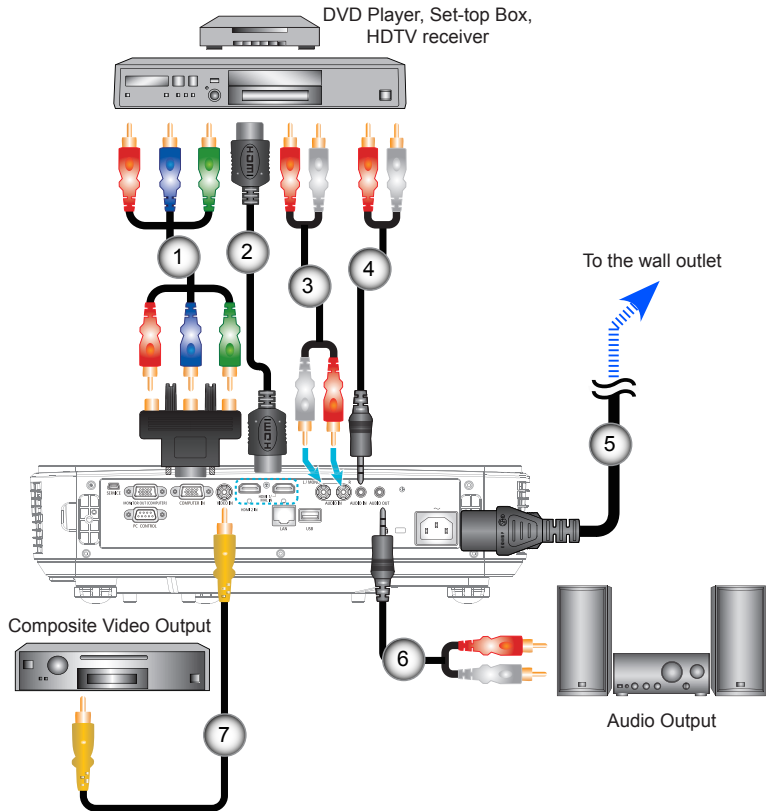
1.....	RS232 cable
2.....	Computer cable (VGA) (supplied)
3.....	HDMI cable
4.....	Audio cable
5.....	Power cord (supplied)
6.....	Audio output cable
7.....	RJ45 cable
8.....	VGA output cable

# Installation

## Connect to Video Sources



❖ Make sure that the power plug is fully inserted into both the projector AC IN terminal and the wall outlet.



❖ Due to the difference in applications for each country, some regions may have different accessories.

❖ When Deep Color is set to ON on your HDMI equipment, video or audio noise may be generated depending on the equipment or cable being used. Should this happen, set Deep Color to OFF (8 bit).

- |        |  |
|--------|--|
| 1..... | 15-Pin to 3 RCA Component/HDTV Adaptor |
| 2..... | HDMI cable                             |
| 3..... | Audio                                  |
| 4..... | Audio Cable/RCA                        |
| 5..... | Power cord (supplied)                  |
| 6..... | Audio Cable/RCA                        |
| 7..... | Composite video cable                  |

HDMI cable: Use High Speed HDMI® Cable.

## Powering On/Off the Projector

### NOTE

❖ When you first turn on the projector, you will get the Startup menu. This menu gives you the opportunity to select the menu languages. To select the language, use the ▲, ▼, ◀, ▶, or ► button on the remote control. Select your language. Refer to Language on page 39.

❖ While the POWER indicator is blinking green in short cycles, the power cannot be turned off by using the power button.

### NOTE


❖ (\*)When “Normal” is selected for “Standby Mode”, the Power LED will turn red; when “Network standby” is selected for “Standby Mode”, the Power LED will turn orange.

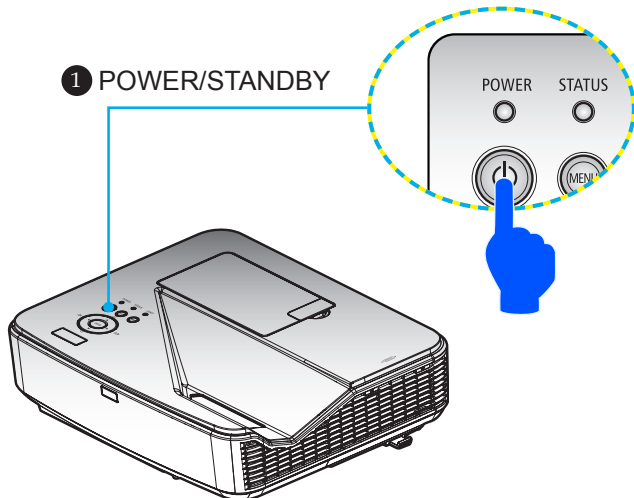
### NOTE

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

❖ If you turn on the projector immediately after the lamp is turned off or when the temperature is high, the fans run without displaying an image for a while and then the projector will display the image.

### 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 projector by pressing “POWER” on the remote control or  on the control panel. At this moment, the POWER/STANDBY LED will now turn Green. ①  
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 your source (computer, notebook, video player, etc.)  
The projector will detect your source automatically.
- ❖ If you connect multiple sources at the same time, press the “SOURCE” button on the control panel or direct source keys on the remote control to switch between inputs.



## Powering Off the Projector



❖ While the POWER indicator is blinking green in short cycles, the power cannot be turned off by using the power button.

1. Press the “POWER OFF” button on the remote control or the  button on the control panel to turn off the projector lamp, you will see a message as below on the on-screen display.



2. Press the “POWER OFF” button again to confirm.
3. Disconnect the power cord from the electrical outlet and the projector. If you disconnect the power cord while viewing the picture and connect the power cord again, wait for at least one second until you connect the power cord again.

## Warning Indicator



❖ For more information on STATUS LED, refer to page 53.

- ❖ When the “STATUS” LED indicator flashes red, it indicates the projector has overheated. The projector will automatically shut itself down.

WARNING! TEMPERATURE TOO HIGH

1. MAKE SURE AIR IN AND OUTLETS ARE NOT BLOCKED.
2. MAKE SURE THE ENVIRONMENT TEMPERATURE IS UNDER 40 DEGREE C

- ❖ When the “LAMP” LED indicator turns red and the message below displays on-screen, the projector has detected that the lamp is approaching its end of life. When you see this message, change the lamp as soon as possible.

WARNING! LAMP

LAMP WARNING  
LAMP LIFE IS ABOVE LIMIT TIME. LAMP OFF!

WARNING! LAMP

LAMP WARNING  
PLEASE REPLACE THE LAMP.

- ❖ When the “STATUS” LED indicator flashes red and the message below displays on-screen, it indicates the fan failed. Stop using the projector and disconnect the power cord from the electrical outlet, then contact your local dealer or our service center.

WARNING! FAN LOCKED

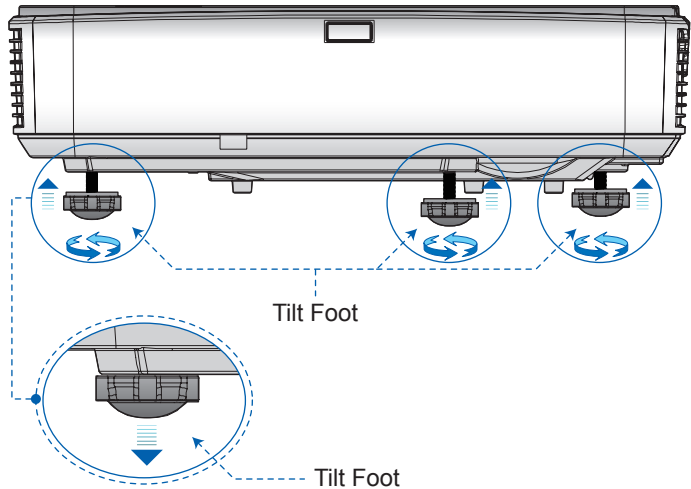
THE PROJECTOR WILL SWITCH OFF AUTOMATICALLY.

## Adjusting the Projected Image

### Adjusting the Height of Projector Image

*The projector is equipped with the tilt foot for adjusting the image height.*

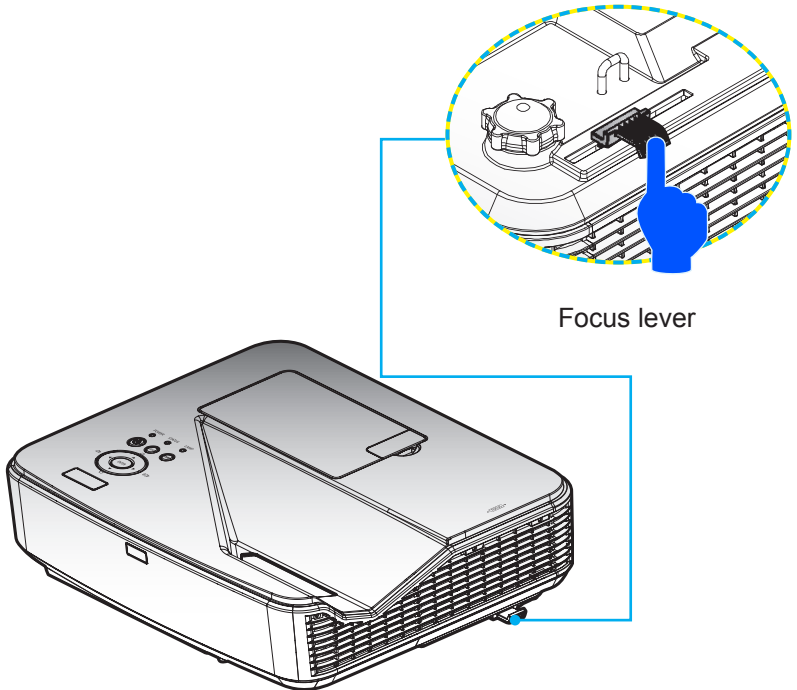
1. Locate the tilt foot you wish to modify on the underside of the projector.
2. Rotate the tilt foot clockwise to raise the projector or counter clockwise to lower it. Repeat with the remaining feet as needed.



# Installation

## Adjusting the Projector's Focus

To focus the image, slide the focus lever until the image is clear.

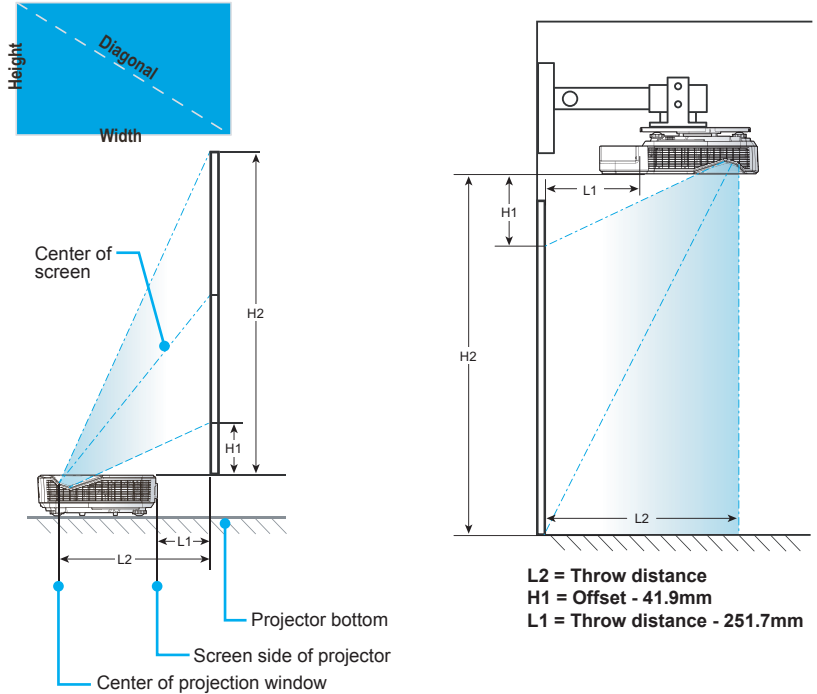




# Installation

## Adjusting Projection Image Size (Diagonal)

Projection Image Size from 85" to 100" (2.16 to 2.54 meters).



Screen Size						H1	H2	L1		L2			
Diagonal		Width		Height				wide		wide			
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		
85.0	2159	74	1882	42	1058	6	154	48	1212	9	222	19	474
90.0	2286	78	1992	44	1121	7	165	51	1286	10	250	20	502
95.0	2413	83	2103	47	1183	7	177	54	1360	11	278	21	530
100.0	2540	87	2214	49	1245	7	188	56	1434	12	306	22	558

\* This table is for user's reference only.

## On Screen Display

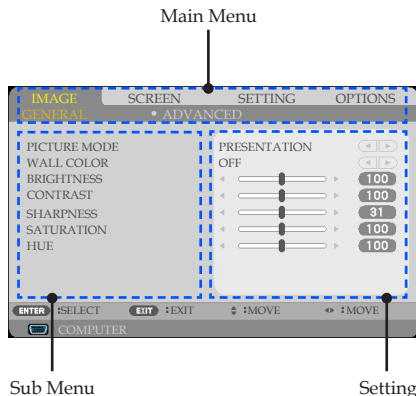
The Projector has a multilingual On Screen Display that allows you to make image adjustments and change a variety of settings.

### How to operate

1. To open the OSD, press the MENU button on the Remote Control.
2. When OSD is displayed, use the ◀ ▶ buttons to select any item in the main menu. While making a selection on a particular page, press the ▼ button to enter sub menu.
3. Use the ▲ ▼ buttons to select the desired item in the sub menu and adjust the settings by using the ◀ or ▶ button.
4. Select the desired item in the sub menu and press the ENTER button to enter another sub menu. Press the MENU button to close the sub menu after adjustment.
5. After adjusting the settings, press the MENU or EXIT button go back to the main menu.
6. To exit, press the MENU button again. The OSD will be closed and the projector will automatically save the new settings.



❖ If no button operation is made for 30 seconds, the OSD will be closed automatically.



# User Controls

## Menu Tree

Main Menu		Sub Menu	Settings
IMAGE	GENERAL	PICTURE MODE	PRESENTATION/HIGH-BRIGHT/VIDEO/MOVIE/SRGB/BLACKBOARD/DICOM SIM./USER1/USER2
		WALL COLOR	OFF/RED/GREEN/BLUE/CYAN/MAGENTA/YELLOW
		BRIGHTNESS	0~100
		CONTRAST	0~100
		SHARPNESS	0~32
		SATURATION	Depend on source format
		HUE	Depend on source format
	ADVANCED	GAMMA	FILM/VIDEO/GRAPHICS/PC/BLACKBOARD/DICOM SIM.
		BRILIANTCOLOR	0~10
		COLOR TEMP.	LOW/MEDIUM/HIGH
		DYNAMIC CONTRAST	ON/OFF
COLOR		RED GAIN/GREEN GAIN/BLUE GAIN/CYAN GAIN/MAGENTA GAIN/YELLOW GAIN/RED BIAS/GREEN BIAS/BLUE BIAS/RESET	
COLOR SPACE	AUTO/RGB/YUV		
SCREEN	GENERAL	ASPECT RATIO	4:3/16:9/16:10/15:9/5:4/NATIVE/AUTO
		OVERSCAN	0%/5%/10%
		V KEYSTONE	-20~+20
	3D SETTINGS	3D	ON/OFF
		3D STRUCTURE	AUTO/FRAME PACKING/TOP-AND-BOTTOM/SIDE-BY-SIDE/FRAME SEQUENTIAL
SETTING	GENERAL	LANGUAGE	ENGLISH / DEUTSCH / FRANÇAIS / ITALIANO / ESPAÑOL / SVENSKA / 日本語 / PORTUGUÊS / ČEŠTINA / MAGYAR / POLSKI / عربي / 简体中文 / 繁體中文 / NORSK / TÜRKÇE / РУССКИЙ / ΕΛΛΗΝΙΚΑ / INDONESIA / 한국어 / SUOMI / NEDERLANDS / DANSK / ROMÂNĂ / HRVATSKI / БЪЛГАРСКИ / ไทย / हिन्दी / ئۇيغۇرچە / TIẾNG VIỆT

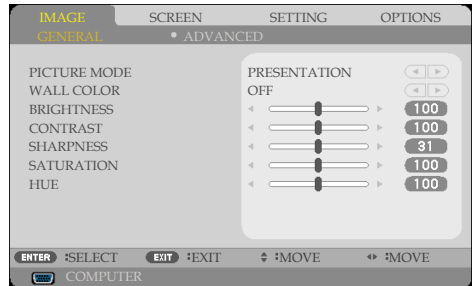
# User Controls

Main Menu		Sub Menu	Settings
SETTING	GENERAL	ORIENTATION	DESKTOP FRONT/DESKTOP REAR/CEILING FRONT/CEILING REAR
		REMOTE SENSOR	FRONT/TOP / FRONT / TOP
		HDMI SETTINGS	VIDEO LEVEL (AUTO/NORMAL/ENHANCED)/ AUDIO SELECT (HDMI1/HDMI2 / COMPUTER)
		MUTE	ON/OFF
		VOLUME	0~31
	SIGNAL	PHASE	Depend on source format
		CLOCK	Depend on source format
		H.POSITION	Depend on source format
		V.POSITION	Depend on source format
	ADVANCED	LOGO	ON/OFF
		NETWORK	NETWORK STATUS/DHCP/ IP ADDRESS/SUBNET MASK/GATEWAY/ APPLY
		CLOSED CAPTION	OFF/CC1/CC2/CC3/CC4/T1/T2/T3/T4
		SECURITY	SECURITY/SECURITY TIMER/CHANGE PASSWORD
		TEST PATTERN	ON/OFF
	OPTIONS	GENERAL	INPUT SEARCH
INPUT			HDMI1/HDMI2 / COMPUTER / VIDEO
FAN MODE			AUTO/HIGH ALTITUDE
INFORMATION HIDE			ON/OFF
BACKGROUND COLOR			BLACK/BLUE
RESET			YES/NO
LAMP/ FILTER SETTINGS		LAMP LIFE REMAINING	
		LAMP HOURS USED	
		FILTER HOURS USED	
		ECO MODE	NORMAL/ECO
		LAMP LIFE REMINDER	ON/OFF
		FILTER USAGE HOURS	
		CLEAR LAMP HOURS	YES/NO
		CLEAR FILTER HOURS	YES/NO

# User Controls

Main Menu		Sub Menu	Settings
OPTIONS	INFORMATION	MODEL NO.	
		SERIAL NUMBER	
		SOURCE	
		RESOLUTION	
		SOFTWARE VERSION	
	ADVANCED	STANDBY MODE	NORMAL/NETWORK STANDBY
		DIRECT POWER ON	ON/OFF
		AUTO POWER OFF (MIN)	0~180
		OFF TIMER (MIN)	0~995
		CONTROL PANEL LOCK	ON/OFF

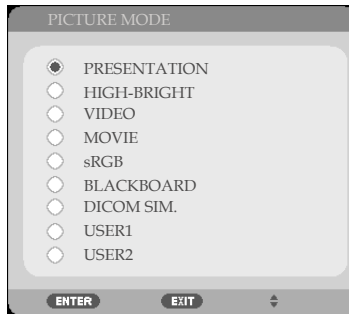
## IMAGE | GENERAL



❖ **DICOM SIM.** on this projector is a setting for adjusting images to approximate the DICOM standards and may not project images properly. Therefore, DICOM SIM. must be used for educational purposes only and should not be used for actual medical diagnosis.

### PICTURE MODE

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



- ▶ **PRESENTATION:** For computer or notebook.
- ▶ **HIGH-BRIGHT:** Maximum brightness from PC input.
- ▶ **VIDEO:** This mode is recommended for typical TV program viewing.
- ▶ **MOVIE:** For home theater.
- ▶ **sRGB:** Standardized accurate color.
- ▶ **BLACKBOARD:** This mode should be selected to achieve optimum color settings when projecting onto a blackboard (green).
- ▶ **DICOM SIM.:** Setting for adjusting images to approximate the DICOM standards.
- ▶ **USER1/USER2:** Memorize user's settings.

# User Controls

## WALL COLOR

Use this function to choose a proper color according to the wall. It will compensate the color deviation due to the wall color to show the correct image tone.

## BRIGHTNESS

Adjust the brightness of the image.

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

## CONTRAST

The contrast controls the degree of 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

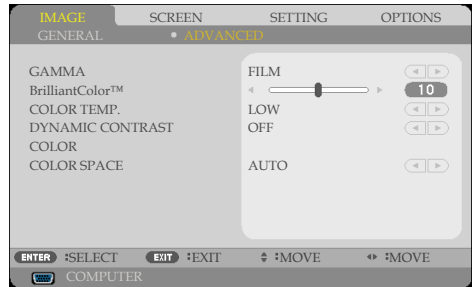
Adjust the color balance of red and green.

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

Input signal	BRIGHTNESS	CONTRAST	SHARPNESS	SATURATION	HUE
COMPUTER/ HDMI (RGB)	YES	YES	YES	NO	NO
COMPUTER/ HDMI (COMPONENT)	YES	YES	YES	YES	YES
VIDEO	YES	YES	YES	YES	YES

❖ Yes=Adjustable, No=Not adjustable

## IMAGE | ADVANCED



### GAMMA

This allows you to choose a gamma table that has been fine-tuned to bring out the best image quality for the input.

- ▶ FILM: for home theater.
- ▶ VIDEO: for video or TV source.
- ▶ GRAPHICS: for image source.
- ▶ PC: for PC or computer source.
- ▶ BLACKBOARD: for displaying on the blackboard.
- ▶ DICOM SIM.: for DICOM standards.

### BrilliantColor™

This adjustable item utilizes a new color-processing algorithm and system level enhancements to enable higher brightness while providing true, more vibrant colors. The range is from “0” to “10”. If you prefer a stronger enhanced image, adjust toward the maximum setting. For a smoother, more natural image, adjust toward the minimum setting.

### COLOR TEMP.

Adjust the color temperature. At higher temperature, the screen looks colder; at lower temperature, the screen looks warmer.

### DYNAMIC CONTRAST

Turning this item on allows the contrast ratio to be adjusted to the proper level.



- ❖ The Color Temp is not available when “HIGH-BRIGHT” or “sRGB” is selected for “PICTURE MODE”.



# User Controls

## COLOR

Press ENTER into the next menu as below and then use the ▲ or ▼ button to select item.

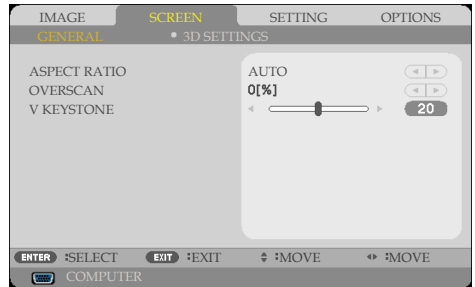
- ▶ RED GAIN/GREEN GAIN/BLUE GAIN/CYAN GAIN/MAGENTA GAIN/YELLOW GAIN/RED BIAS/GREEN BIAS/BLUE BIAS: Use the ◀ or ▶ button to select RED, GREEN, BLUE, CYAN, MAGENTA AND YELLOW COLORS.
- ▶ RESET: Choose “YES” to return the factory default settings for color adjustments.



## COLOR SPACE

Select an appropriate color matrix type from AUTO, RGB or YUV.

## SCREEN | GENERAL



### ASPECT RATIO

Use this function to choose your desired aspect ratio.

- ▶ 4:3: This format is for 4×3 input sources.
- ▶ 16:9: This format is for 16×9 input sources, like HDTV and DVD enhanced for Wide screen TV.
- ▶ 16:10: This format is for 16×10 input sources, like widescreen laptops.
- ▶ NATIVE: This format displays the original image without any scaling.
- ▶ AUTO: Automatically selects the appropriate display format.

### OVERSCAN

Overscan function removes the noise in a video image. Overscan the image to remove video encoding noise on the edge of video source.

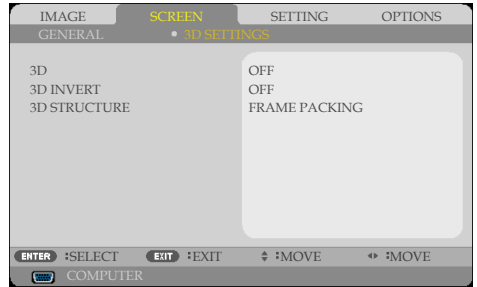
### V KEYSTONE

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



- ❖ Each I/O has different setting of "OVERSCAN".

## SCREEN | 3D SETTINGS



- ❖ “3D INVERT” and “3D STRUCTURE” only available when 3D is enabled.
- ❖ Compatible 3D source, 3D content and active shutter glasses are required for 3D viewing.

### 3D

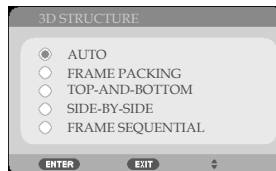
Choose “ON” to turn this item on for 3D images. (default: OFF)

### 3D INVERT

- ▶ Choose “ON” to invert left and right frame contents.
- ▶ Choose “OFF” for default frame contents.

### 3D STRUCTURE

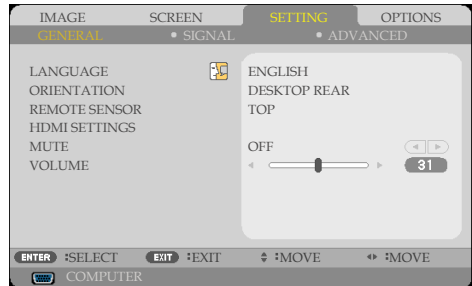
Adjust the 3D format to display 3D content correctly.



**TIP:** 3D supported signal

- For PC Signal :
  - 1024x768@60/120Hz
  - 1280x720@60Hz
  - 1280x800@60/120Hz
  - 1920x1080@60Hz
- For Video Signal :
  - 480i@60Hz
- For HDMI Signal :
  - 720p (Frame Packing) 1280 x 720@50/60/59.94
  - 1080p (Frame Packing) 1920 x 1080@23.98/24
  - 720p (Top and Bottom) 1280 x 720@50/60/59.94\* (\*Select manually)
  - 1080p (Top and Bottom) 1920 x 1080@23.98/24
  - 1080i (Side by Side (Half)) 1920 x 1080@50/60/59.94\* (\*Select manually)

## SETTING | GENERAL



### 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 ENTER to finalize the selection.



❖ DESKTOP-REAR and CEILING-REAR are to be used with a translucent screen.

### ORIENTATION

#### ▶ DESKTOP FRONT:

When selected, the image is projected straight on the screen.

#### ▶ DESKTOP REAR:

When selected, the image will appear reversed.

#### ▶ CEILING FRONT:

When selected, the image will turn upside down.

#### ▶ CEILING REAR

This is the default selection. The image will appear reversed in upside down position.

## REMOTE SENSOR

Choose the remote sensor location.

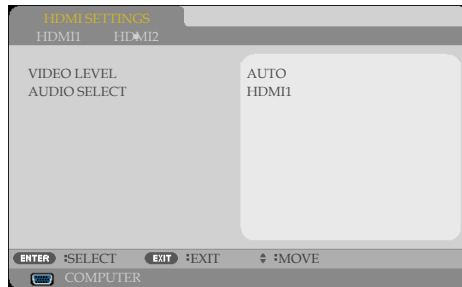
## HDMI SETTINGS

Use this feature to set HDMI1/MHL or HDMI2

- ▶ VIDEO LEVEL: Select "AUTO" to automatically detect video level. If automatic detection may not work well, select "NORMAL" to disable the "ENHANCED" feature of your HDMI equipment or select "ENHANCED" to improve image contrast and increase detail in the dark areas.
- ▶ AUDIO SELECT: Use this function to select the audio source from "HDMI1/MHL", "HDMI2" or "COMPUTER".



- ❖ "HDMI SETTING" is only supported under HDMI source.



## MUTE

- ▶ Choose "ON" to turn mute on.
- ▶ Choose "OFF" to turn mute off.

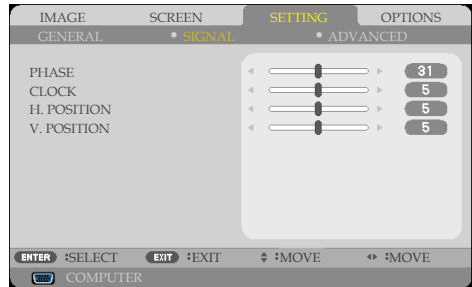
## VOLUME

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

## SETTING | SIGNAL



- ❖ “SIGNAL” is only supported in Analog VGA (RGB) signal.



### 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

Change the display data frequency to match the frequency of your computer's graphic card. Use this function only if the image appears to flicker vertically.

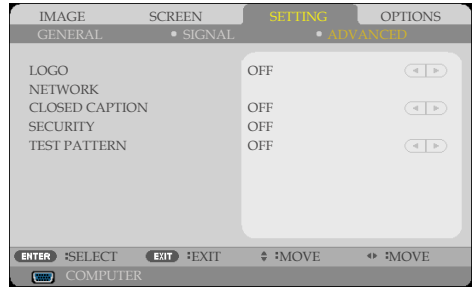
### H. POSITION

- ▶ 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.

## SETTING | ADVANCED



### LOGO

Use this function to display the startup screen (NEC logo).

- ▶ ON: Displays the NEC logo.
- ▶ OFF: Not display the NEC logo.

### NETWORK

Refer to pages 43-45.

### CLOSED CAPTION

Use this function to enable closed caption and activate the closed caption menu. Select an appropriate closed captions option: OFF, CC1, CC2, CC3, CC4, T1, T2, T3 and T4.

### SECURITY

- ▶ OFF: Choose "OFF" to be able to switch on the projector without password verification.
- ▶ ON: Choose "ON" to use security verification when turning on the projector.



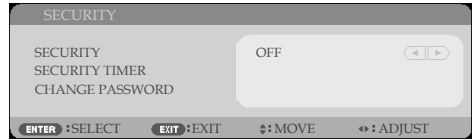
#### ■ First Time:

1. The default password : ▲▶▼◀
2. Use the remote to enter your password, and then press ENTER to confirm your password.



❖ When "NORMAL" is selected for "STANDBY MODE" from the menu, the projector cannot be controlled in standby mode from external equipment.

## SETTING | ADVANCED | SECURITY



### SECURITY TIMER

Use this function to set how long (MONTH/DAY/HOUR) the projector can be used. Once this time has elapsed you will be requested to enter your password again.



The “SECURITY TIMER” will restart to count down when the projector is turned off and then turned back on.

### CHANGE PASSWORD



❖ Password default value is “▲▶▼◀” (first time).

1. Press ENTER to enter SECURITY KEYWORD setting.
2. The password has to be combination of ◀▶▲▼ in 4 characters.

#### ▶ Current password



3. Enter your **old** password and then press ENTER to confirm your password.

#### ▶ Input new password



4. Enter your **new** password and then press ENTER to confirm your password.

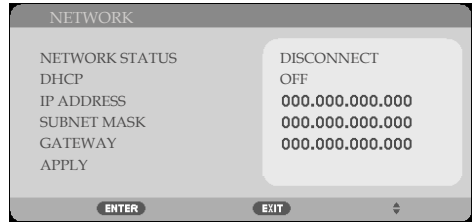


## ▶ Confirm new password



5. Enter the new password again and press ENTER to confirm.
- ▶ If the incorrect password is entered 3 times, the projector will automatically shut down. When the projector is turned on again, the password entry screen will be displayed on. Enter your password.
  - ▶ If you have forgotten your password, please contact your local office for support.

## SETTING | ADVANCED | NETWORK



### NETWORK STATUS

Display the network connection status. (default: DISCONNECT)

### DHCP

Use this function to select your desired startup screen. If you change the setting from one to another, when you exit the OSD menu, the new setting will take effect on next open.

- ▶ ON: Assign an IP address to the projector from an external DHCP server automatically.
- ▶ OFF: Assign an IP address manually.

### IP ADDRESS

Select an IP address.

### SUBNET MASK

Select subnet mask number.

### GATEWAY

Select the default gateway of the network connected to the projector.

### APPLY

Press ENTER to apply the selection.

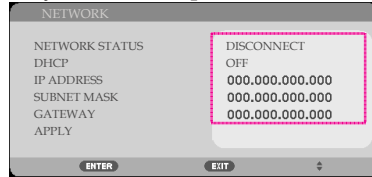
# User Controls

NOTE

- ❖ When you used the projector IP address, you can not link to your service server.
- ❖ PjLink: Set a password for PjLink. PjLink is a standardization of protocol used for controlling projectors of different manufacturers. This standard protocol is established by Japan Business Machine and Information System Industries Association (JBMA) in 2005. The projector supports all the commands of PjLink Class 1.
- ❖ AMX BEACON: Turn on or off for detection from AMX Device Discovery when connecting to the network supported by AMX's NetLinX control system.
- ❖ CRESTRON ROOMVIEW compatibility: The projector supports CRESTRON ROOMVIEW, allowing multiple devices connected in the network to be managed and controlled from a computer or a controller. For more information, visit <http://www.crestron.com>

## How to use web browser to control your projector

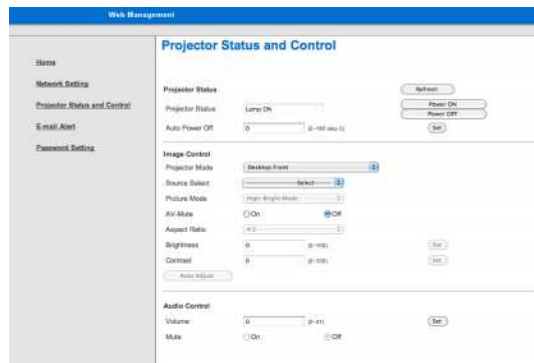
1. Turn on DHCP to allow the DHCP server to automatically assign an IP, or manually enter the required network information.



2. Then choose apply and press ENTER button to complete the configuration process.
3. Open your web browser and type in from the OSD LAN screen then the web page will display as below:



4. Open "Projector Status and Control" to control your projector.




*When making a direct connection from your computer to the projector*

Step 1: Find an IP Address (default:192.168.0.10) from LAN function of projector.

192.168.0.10

# User Controls

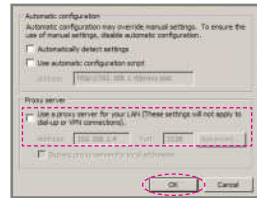
Step 2: Select apply and press the ENTER button on the remote control or the control panel to submit function or press the MENU button on the remote control or the control panel to exit.

Step 3: To open Network Connections, click **Start**, click **Control Panel**, click **Network and Internet Connections**, and then click **Network Connections**. Click the connection you want to configure, and then, under **Network Tasks** , click **Change settings of this connection**.

Step 4: On the **General** tab, under **This connection uses the following items**, click **Internet Protocol (TCP/IP)**, and then click "Properties."

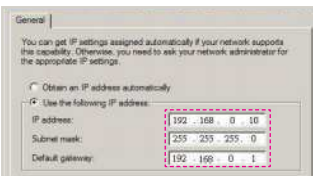


Step 7: The **Local Area Network (LAN) Setting** dialog box appears, In the **Proxy Server** area, cancel the **Use a proxy server for your LAN check box.**, then click "OK" button twice.



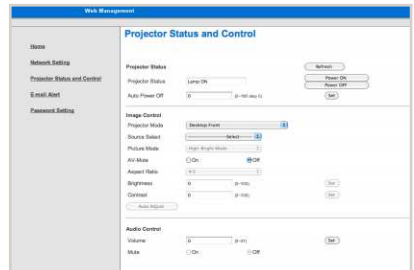
Step 5: Click **Use the following IP address**, and type in as below:

- 1) IP address: 192.168.0.10
- 2) Subnet mask: 255.255.255.0
- 3) Default gateway: 192.168.0.1

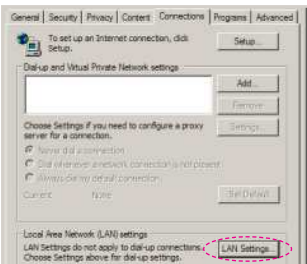


Step 8: Open your IE and type in the IP address of 192.168.0.10 in the URL then press the ENTER button key.

Step 9: Open "Projector Status and Control" to control your projector.



Step 6: To open Internet Options, click IE web browser, click Internet Options, click the **Connections** tab and click "LAN Settings..."



## OPTIONS | GENERAL



### INPUT SEARCH

- ▶ 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

Use this option to enable / disable input sources. Press ENTER to enter the sub menu and select which sources you require. Press the ENTER button to finalize the selection. The projector will not search for inputs that are not selected.

### FAN MODE

- ▶ AUTO: The built-in fans automatically run at a variable speed according to the internal temperature.
- ▶ HIGH ALTITUDE: The built-in fans run at high speed.

Select this option when using the projector at altitudes approximately 2500 feet/760 meters or higher.

### INFORMATION HIDE

- ▶ ON: Choose "ON" to hide the info message.
- ▶ OFF: Choose "OFF" to show the "SEARCHING" message.

### BACKGROUND COLOR

Use this feature to display a "BLACK" or "BLUE" screen when no signal is available.

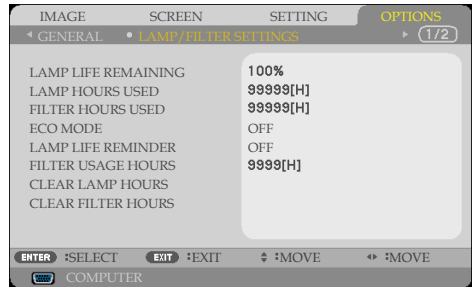
### RESET

Choose "YES" to return the display parameters on all menus to the factory default settings. <sup>(\*)</sup>



❖ <sup>(\*)</sup> Except "LANGUAGE", "LOGO", "NETWORK", "SECURITY", "FAN MODE", "BACKGROUND COLOR", "LAMP LIFE REMAINING", "LAMP HOURS USED", "FILTER HOURS USED", "FILTER USAGE HOURS" and "STANDBY MODE".

## OPTIONS | LAMP/FILTER SETTINGS



### LAMP LIFE REMAINING

Showing the Lamp life.

### LAMP HOURS USED

Display the projection time.

### FILTER HOURS USED

Display the filter used time.

### ECO MODE

Choose "ECO" to dim the projector lamp which will lower power consumption and extend the lamp life. Choose "OFF" to return to normal mode.

### LAMP LIFE REMINDER

Choose this function to show or to hide the warning message when the changing lamp message is displayed. The message will appear when the lamp has reached the end of its life.

### FILTER USAGE HOURS

Display the time preference between displaying the message for cleaning the filter. Clean the filter when you get the message. When "000[H]" is set, the message will not be displayed.

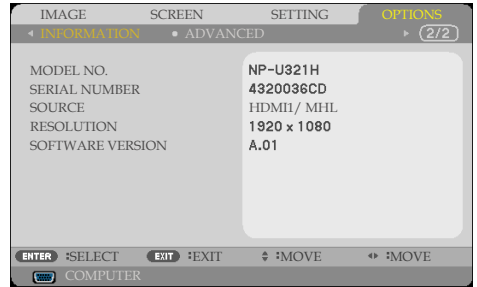
### CLEAR LAMP HOURS

Reset the lamp hour counter after replacing the lamp.

### CLEAR FILTER HOURS

Reset the filter hour counter after cleaning the filter.

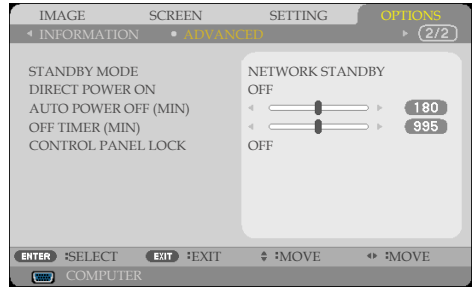
## OPTIONS | INFORMATION



### INFORMATION

To display the projector information for model no., serial number, source, resolution, and software version on the screen.

## OPTIONS | ADVANCED




❖ Network Standby mode will disable the following connectors, buttons or functions when the projector is in standby:

- AUDIO OUT connector
- LAN and Mail Alert functions
- Buttons other than POWER button on the cabinet
- Buttons other than POWER ON button on the remote control
- PC Control connector
- Virtual Remote Tool, PC Control Utility Pro 4/PC Control Utility Pro 5

### STANDBY MODE

- ▶ NETWORK STANDBY: Choose "NETWORK STANDBY" to save power dissipation further  $< 0.5W$ .
- ▶ NORMAL: Choose "NORMAL" to return to normal standby.

### DIRECT POWER ON

Choose "ON" to activate Direct Power mode. The projector will automatically power on when AC power is supplied, without pressing the  button on the projector control panel or the POWER ON button on the remote control.

### 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).

### OFF TIMER (MIN)

Sets the countdown timer interval. The countdown timer will start, with or without a signal being sent to the projector. The projector will automatically power off when the countdown has finished (in minutes).

### CONTROL PANEL LOCK

When the keypad lock function is "ON", the control panel will be locked however, the projector can be operated by the remote control. By selecting "OFF", you will be able to reuse the control panel. Press and hold the EXIT button on the projector cabinet for about 10 seconds to turn off "CONTROL PANEL LOCK".

Even when "NORMAL" mode is selected for "STANDBY MODE" and "ON" is selected for "CONTROL PANEL LOCK", the POWER button on the cabinet can be used to turn on the power.



## 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 connectors are not crooked or broken.
- ▶ Check if the projection lamp has been securely installed. Please refer to the “Replacing the lamp” section.
- ▶ Make sure the projector is switched on.
- ▶ Ensure that the “AV-MUTE” feature is not turned on.

### **Problem: Partial, scrolling or incorrectly displayed image**

- ▶ Press “AUTO ADJ.” on the remote control or control panel.
- ▶ If you are using a PC:
  - For Windows 7:
    1. From the “My Computer” icon, open the “Control Panel” folder, and double click the “Display” icon.
    2. Select the “Settings” tab
    3. Click on the “Advanced Properties”.

#### For Windows Vista:

1. From the “My Computer” icon, open the “Control Panel” folder, and double click the “Appearance and Personalization”
2. Select “Personalization”
3. Click “Adjust screen resolution” to display “Display Settings”.  
Click on the “Advanced Settings”.

**If the projector is still not projecting the whole image, you will also need to change the monitor display you are using. Refer to the following steps.**

4. Verify the resolution setting is less than or equal to 1280 x 1024 resolution.
  5. Select the "Change" under the "Monitor" tab .
  6. Click on "Show all devices". Next, select "Standard monitor types" under the SP box; choose the resolution mode you need under the "Models" box.
- ▶ If you are using a Notebook:
1. First, follow the steps above to adjust resolution of the computer.
  2. Press the toggle output settings. A combination of function keys will enable/disable the external display. Usually, the combination of the "Fn" key along with one of the 12 function keys gets the external display to come on or off. For example, NEC notebook PCs use Fn + F3, While Dell notebook PCs use Fn + F8 key combination to toggle through external display selection.
- ▶ 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" to correct it. Refer to the "SETTING" section for more information.
- ▶ Change the monitor color setting from your computer.

**Problem: Image has vertical flickering bar**

- ▶ Use “CLOCK” to make an adjustment.
- ▶ 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 Lever on the projector lens.
- ▶ Make sure the projection screen is between the required distance 22.2 to 30.6 cm from the projector (refer to pages 25-26).

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

The projector automatically detects 16:9 DVD and adjusts the aspect ratio by digitizing to full screen with 4:3 default setting.

If the image is still stretched, you will also need to adjust the aspect ratio by referring to the following:

- ▶ Please select 4:3 aspect ratio type on your DVD player if you are playing a 16:9 DVD.
- ▶ If you can't select 4:3 aspect ratio type on your DVD player, please select 4:3 aspect ratio in the on screen menu.

**Problem: Image is reversed**

- ▶ Select “SETTING | GENERAL-->ORIENTATION” from the OSD and adjust the projection direction.

**Problem: Lamp burns out or makes a popping sound**

- ▶ When the lamp reaches its end of life, it will burn out and may make a loud popping sound. If this happens, the projector will not turn on until the lamp module has been replaced. To replace the lamp, follow the procedures in the “Replacing the Lamp”.

## Problem: LED lighting message

### Power Indicator

Indicator Condition			Projector Condition	Note
Off			The main power is off.	Without connecting power cable.
Blinking light	GREEN	0.5sec ON / 0.5sec OFF	The projector is getting ready to turn on.	Wait for a moment.
	GREEN	2.5sec ON / 0.5sec OFF	Off Timer is enabled.	--
	ORANGE	0.5sec ON / 0.5sec OFF	Cooling	--
Steady light	GREEN		Power on mode	--
	ORANGE		Network Standby mode	Connecting power cable.
	RED		Normal Standby mode	Connecting power cable.

### Status Indicator

Indicator Condition			Projector Condition	Note
Off			Normal Condition	--
Blinking light	RED	2cycle (0.5sec ON / 0.5sec OFF)	Temperature error	The projector is overheated. Move the projector to a cooler location.
		3cycle (0.5sec ON / 0.5sec OFF)	Power error	Power unit is not working properly. Contact your dealer.
		4cycle (0.5sec ON / 0.5sec OFF)	FAN error	Fans do not work correctly.
		6cycle (0.5sec ON / 0.5sec OFF)	Lamp error	Lamps fail to light. Wait a full minute and then turn on again.
Steady light	RED		Control Panel Lock is working	You have pressed cabinet button when Control Panel Lock is on.

### Lamp Indicator

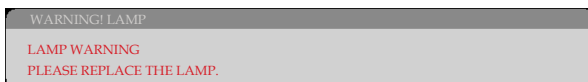
Indicator Condition			Projector Condition	Note
Off			Normal Condition	--
Blinking light	RED	0.5sec ON / 0.5sec OFF	Lamp has reached its end of life.	--
Steady light	RED		Lamp has been used beyond its limit.	The projector will not turn on until the lamp is replaced.

## 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.



- ▶ Replacing the lamp - the lamp is about to reach its maximum lifetime. Prepare to replace it soon.



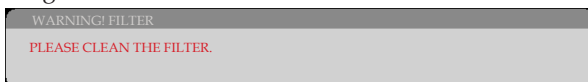
NOTE: When you continue to use the projector for another 100 hours after the lamp has reached the end of its life, the projector cannot turn on.

If this happens, after replacing the lamp, connect the power cord and then press and hold the HELP button on the remote control at least 10 seconds. This will allow you to turn on the projector. Clear the lamp hours by selecting "OPTIONS" -> "LAMP/FILTER SETTINGS" -> "CLEAR LAMP HOURS" from the menu.

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



- ▶ Cleaning the filter



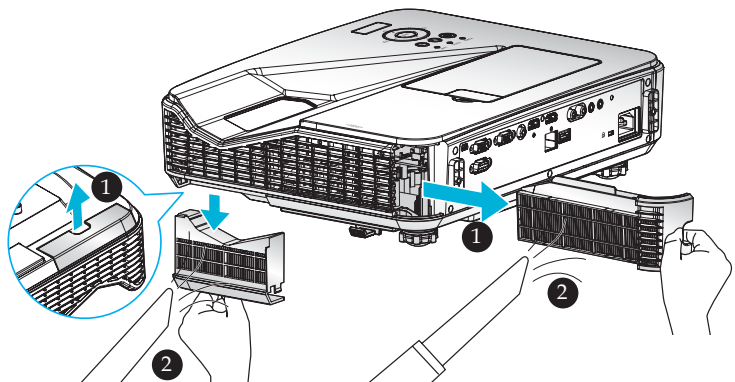
## Installing and Cleaning the Air Filter

We recommend you clean the air 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:



- ❖ A proper maintenance will prevent overheating and projector malfunction.
- ❖ The specific interfaces are selected in terms of the specifications of types.
- ❖ Make sure to power off the projector before cleaning the filters.
- ❖ After cleaning the filters, securely install the filters.
- ❖ When the filters are removed, do not put your fingers into the openings on the projector.



### Filter Replacing Procedure:

1. Switch off the power to the projector by pressing the POWER OFF button on the remote control or the  button on the control panel.
  2. Disconnect the power cord.
  3. Pull out the filters, as shown in the illustration. **1**
  4. Carefully remove the filters. Then clean or replace the filters. **2**
- To install the filters, reverse the previous steps.
5. Turn on the projector and reset the filter usage counter after the filters are replaced.

## Replacing the lamp

### optional lamp NP34LP

The projector will detect the lamp life at 3000 hours in Eco Mode Off (4000 hours in Eco Mode On). When the “POWER” LED indicator flashes red and the message below displays on-screen, the projector has detected that the lamp is approaching its end of life. (Refer to page 23) It will show you a warning message:



Warning: To avoid burns, allow the projector to cool for at least 60 minutes before you replace the lamp!



When you see this message, change the lamp as soon as possible. Make sure the projector has been cooled down for at least 60 minutes before changing the lamp. Make sure to replace the lamp and the filters at the same time.



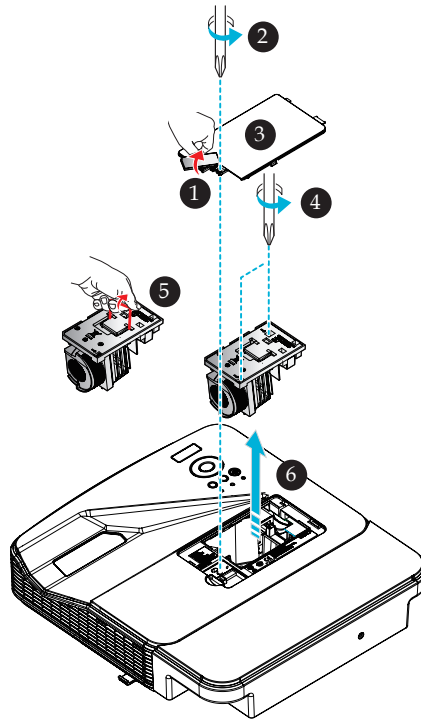
Warning: To reduce the risk of personal injury, do not drop the lamp module or touch the lamp bulb. The bulb may shatter and cause injury if it is dropped.




Do not break the glass on the lamp module. Keep finger prints off the glass surface on the lamp module. Leaving finger prints on the glass surface might cause an unwanted shadow and poor picture quality.



Be sure to tighten the screws after replacing the lamp module.



## Lamp Replacing Procedure:

1. Switch off the power to the projector by pressing the POWER OFF button on the remote control or the  button on the control panel.
2. Allow the projector to cool down at least 60 minutes.
3. Disconnect the power cord.
4. Remove the dummy cover. **1**
5. Use a screwdriver to loosen the screw on the lamp cover. **2**
6. Slide and remove the cover. **3**
7. Loosen 2 screws on the lamp module. **4**
8. Lift the handle. **5**
9. Pull out the lamp module. **6**
10. Install the new lamp module by reversing the previous steps. Be sure to tighten the screws on the lamp module and the lamp cover.
11. Replace the filter. (refer to page 55)
12. After replacing the lamp and changing the filters, turn on the power, and select the [MENU] button -> OPTIONS | LAMP/FILTER SETTINGS -> CLEAR LAMP HOURS to reset the lamp usage hours and CLEAR FILTER HOURS to reset the filter usage hours. Refer to page 47.



## Cleaning procedure for the cover glass

If the cover glass of projection lens is dusty or blemished, please clean it as following procedure:

1. Turn off the projector and cool projector down for a while.
2. Unplug the power cord from outlet.
3. Blow the dust by blower for cameras which you could buy from camera shops. Wipe the cover glass gently using a cleaning cloth.

 **CAUTION:**

- Make sure to use a commercially available cleaning cloth for wiping the mirror or lens
- Please do not wipe the cover glass hard because that may cause serious damage on the surface of it.
- Wiping might scratch the cover glass. Optical performance of the projector will thus be impacted if cover glass is scratched after wiping. Optical performance impact will be dependent on the scratch condition of it.
- Do not use liquid cleaners or chemicals on the cloth because it may contaminate the cloth and cause serious damage on the surface of cover glass.
- Do not use a spray containing flammable gas to get rid of accumulated dust on the cover glass. It may cause of fire.

## Specifications

<b>Optical</b>	NP-U321H
Projection System	Single DLP® chip (0.65", aspect ratio 16:9)
Resolution *1	1920 × 1080 pixels (1080P)
Lens	Manual focus
	F2.4
Lamp	260W AC (220W in ECO mode)
Light Output *2*3	3200 lumens
	Approx. 85% in ECO mode
Contrast Ratio *3	10000:1 with DYNAMIC CONTRAST ON
Image Size (Diagonal)	85" to 100" / 2.16 to 2.54 m
Projection Distance (mini. - max.)	22.2 to 30.6 cm

\*1 Effective pixels are more than 99.99%.

\*2 This is the light output value (lumens) when [Picture Mode] is set to [High-Bright] in the menu. If any other mode is selected as [Picture Mode], the light output value may drop slightly.

\*3 Compliance with ISO21118-200

<b>Electrical</b>	NP-U321H
Inputs	1 x VGA and Y/Pb/Pr, 2 x HDMI (Standard HDMI connector and one with MHL function support), 1 x VGA Audio (Stereo mini jack), 1 x Composite Video (RCA (yellow)), 2 x Composite Audio (RCA for both left and right)
Outputs	1 x VGA (D-sub female 15 pin connector) (Separate sync signal only), 1 x Audio (Stereo mini jack(green))
PC Control	1 x PC Control Port (D-Sub 9 Pin)
Wired LAN Port	1 x RJ-45 (10/100 BASE-T)
Service Port	Mini USB type B (for FW download)
Others	1 x USB (type A) for providing 5V/1A output only
Color Reproduction	1.07 billion colors simultaneously, Full color
Compatible Signals *5	Analog: VGA/SVGA/XGA/XGA+/WXGA/Quad-VGA/WXGA+/SXGA/SXGA+/WXGA+/UXGA/HD/Full HD/480i/480p/576i/576p/720p/1080i/1080p HDMI: VGA/SVGA/XGA/WXGA/Quad-VGA/SXGA/SXGA+/WXGA+/WXGA++/WSXGA+/480i/480p/576i/576p/720p/1080i/1080p
Horizontal Resolution	540 TV lines: NTSC/NTSC4.43/PAL/PAL-M/PAL-N/PAL60 300 TV lines: SECAM
Scan Rate	Hsync Frequency: 30k ~ 100kHz Vsync Frequency: 50 ~ 120 Hz
Sync Compatibility	Separate Sync
Built-in Speaker	8W

# Appendices

<b>Electrical</b>	NP-U321H
Power Requirement	100 - 240V AC, 50/60 Hz
Input Current	3.5-1.5A
Power Consumption (Typical value)	
ECO Mode OFF	323W (*1)/ 312W (*2)
ECO Mode	272W (*1)/ 264W (*2)
Network Stand-by	2.0W (*1)/ 2.2W (*2)
Normal Stand-by	0.18W (*1)/ 0.30W (*2)
*1: 100V - 130VAC *2: 200V - 240VAC	

\*4 HDMI® (Deep Color, Lip Sync) with HDCP

What is HDCP/HDCP technology?

HDCP is an acronym for High-bandwidth Digital Content Protection. High bandwidth Digital Content Protection (HDCP) is a system for preventing illegal copying of video data sent over a High-Definition Multimedia Interface (HDMI).


If you are unable to view material via the HDMI input, this does not necessarily mean the projector is not functioning properly. With the implementation of HDCP, there may be cases in which certain content is protected with HDCP and might not be displayed due to the decision/intention of the HDCP community (Digital Content Protection, LLC).

Video: Deep Color; 8/10/12-bit, LipSync

\*5 An image with higher or lower resolution than the projector's native resolution (1920 × 1080) will be displayed with scaling technology.

<b>Mechanical</b>	NP-U321H
Installation Orientation	Desktop/Front, Desktop/Rear, Ceiling/Front, Ceiling/Rear
Dimensions	13.8" (W) × 4.1" (H) × 11.1" (D) /350 mm (W) × 105 mm (H) × 281 mm (D) (not including protrusions) 13.8" (W) × 4.6" (H) × 14.8" (D) /350 mm (W) × 117 mm (H) × 376 mm (D) (with cable cover and tilt foot)
Weight	10.4 lbs/4.7 kg
Environmental Considerations	Operational Temperatures : 50° to 95° (10°C to 35°C) 5% to 90% humidity (non-condensing) Storage Temperatures : -4° to 140°F (-20° to 60°C), 5% to 90% humidity (non-condensing)

# Appendices

Regulations	UL/C-UL Approved (UL 60950-1, CSA 60950-1) Meets DOC Canada Class B requirements Meets FCC Class B requirements Meets AS/NZS CISPR.22 Class B Meets EMC Directive (EN55022, EN55024, EN61000-3-2, EN61000-3-3) Meets Low Voltage Directive (EN60950-1, TÜV Approved) 
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**\*6 Operational temperatures**

0 to 2500 feet/760 m in the range of 50° to 95°F(10° to 35°C)

2500 feet/760 m to 5000 feet/1500 m in the range of 50° to 95°F (10° to 35°C)

5000 feet/1500 m to 10000 feet/3000 m in the range of 50° to 86°F (10° to 30°C)

Set [FAN MODE] to [HIGH ALTITUDE] when using the projector at altitudes approximately 2500 feet/760 m or higher.

## Compatibility Modes

### ▶ VGA Analog

#### (1) VGA Analog - PC Signal

Modes	Resolution (dots)	V.Frequency [Hz]	H.Frequency [KHz]
VGA	640x480	60	31.5
VGA	640x480	72	37.9
VGA	640x480	75	37.5
VGA	640x480	85	43.3
SVGA	800x600	56	35.1
SVGA	800x600	60	37.9
SVGA	800x600	72	48.1
SVGA	800x600	75	46.9
SVGA	800x600	85	53.7
XGA	1024x768	60	48.4
XGA	1024x768	70	56.5
XGA	1024x768	75	60.0
XGA	1024x768	85	68.7
XGA+	1152x864	70	63.9
XGA+	1152x864	75	67.5
XGA+	1152x864	85	77.1
QuadVGA	1280x960	60	60.0
SXGA	1280x1024	60	64.0
SXGA	1280x1024	75	80.0
SXGA	1280x1024	85	91.1
SXGA+	1400x1050	60	65.3
UXGA	1600x1200	60	75.0
Apple, Mac II	640x480	67	35.0
Apple, Mac II	832x864	75	49.1
Apple, Mac II	1152x870	75	68.7

## (2) VGA Analog - Extended Wide timing

Modes	Resolution (dots)	V.Frequency [Hz]	H.Frequency [KHz]
HD	1280x720	60	44.8
WXGA	1280x768	60	47.8
WXGA	1280x800	60	49.6
WXGA+	1440x900	60	55.9
Full HD	1920x1080(1080P)	60	67.5

## (3) VGA Analog -Component Signal

Modes	Resolution (dots)	V.Frequency [Hz]	H.Frequency [KHz]
480i	720x480	59.94(29.97)	15.7
576i	720x576	50(25)	15.6
480p	720x480	59.94	31.5
576p	720x576	50	31.3
720p	1280x720	60	45.0
720p	1280x720	50	37.5
1080i	1920x1080	60(30)	33.8
1080i	1920x1080	50(25)	28.1
1080p	1920x1080	23.97/24	27.0
1080p	1920x1080	60	67.5
1080p	1920x1080	50	56.3

## ▶ HDMI Digital

### (1) HDMI - PC Signal

Modes	Resolution (dots)	V.Frequency [Hz]	H.Frequency [KHz]
VGA	640x480	60	31.5
SVGA	800x600	60	37.9
XGA	1024x768	60	48.4
QuadVGA	1280x960	60	60.0
SXGA	1280x1024	60	64.0
SXGA+	1400x1050	60	65.3

### (2) HDMI - Extended Wide timing

Modes	Resolution (dots)	V.Frequency [Hz]	H.Frequency [KHz]
HD	1280x720	60	44.8
HD	1280x720	120	92.9
WXGA	1280x768	60	47.8
WXGA	1280x800	60	49.6
WXGA	1360x768	60	47.7
WXGA	1366x768	60	47.7
WXGA+	1440x900	60	59.9
WXGA++	1600x900	60	59.9
WSXGA+	1680x1050	60	65.3
Full HD	1920x1080(1080P)	60	67.5

# Appendices

## (3) HDMI - Video Signal

Modes	Resolution (dots)	V.Frequency [Hz]	H.Frequency [KHz]
480i	720x480(1440x480)	59.94(29.97)	15.7
576i	720x576(1440x576)	50(25)	15.6
480p	640x480	59.94	31.5
480p	720x480	59.94	31.5
576p	720x576	50	31.3
720p	1280x720	60	45.0
720p	1280x720	50	37.5
1080i	1920x1080	60(30)	33.8
1080i	1920x1080	50(25)	28.1
1080p	1920x1080	23.97/24	27.0
1080p	1920x1080	60	67.5
1080p	1920x1080	50	56.3

## (4) HDMI - 3D Timing

Modes	Resolution (dots)	V.Frequency [Hz]	H.Frequency [KHz]
720p (Frame Packing)	1280x720	50	37.5
720p (Frame Packing)	1280x720	60	45.0
1080p (Frame Packing)	1920x1080	24	27.0
720p (Top and Bottom)	1280x720	50	37.5
720p (Top and Bottom)	1280x720	60	45.0
1080p (Top and Bottom)	1920x1080	24	27.0
1080i (Side by Side (Half))	1920x1080	50(25)	28.1
1080i (Side by Side (Half))	1920x1080	60(30)	33.8
Graphic source monitor range limits	Horizontal scan rate:		30k-100kHz
	Vertical scan rate:		50-120Hz
	Max. pixel rate		Analog:162MHz Digital:165MHz

## (5) MHL signal table

Signal	Resolution (dots)	Aspect Ratio	Refresh Rate (Hz)
VGA	640x480	4:3	59.94/60
HDTV (1080p)	1920x1080	16:9	23.98/24
HDTV (1080i)	1920x1080	16:9	50/59.94/60
HDTV (720p)	1280x720	16:9	50/59.94/60
SDTV (480p)	720x480	4:3/16:9	59.94/60
SDTV (576p)	720x576	4:3/16:9	50



# Appendices

**TIP:**

- An image with higher or lower resolution than the projector's native resolution (1920 × 1080 ) will be displayed with scaling technology.
- Sync on Green and Composite sync signals are not supported.
- Signals other than those specified in the table above may not be displayed correctly. If this should happen, change the refresh rate or resolution on your PC. Refer to Display Properties help section of your PC for procedures.



## Warning:

If you wish to have the projector installed on the ceiling:

- Do not attempt to install the projector yourself.
- The projector must be installed by qualified technicians in order to ensure proper operation and reduce the risk of bodily injury.
- In addition, the ceiling must be strong enough to support the projector and the installation must be in accordance with any local building codes.
- Please consult your dealer for more information.



Please note that damage resulting from incorrect installation will invalidate the warranty.



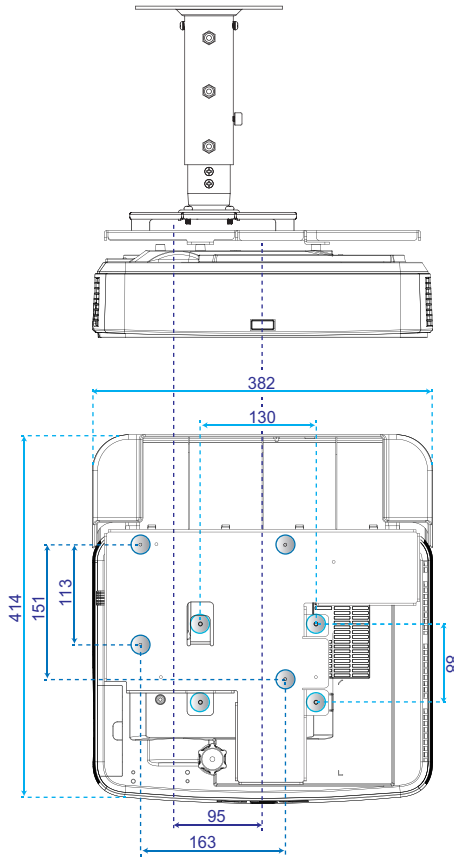
## Warning:

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

## Ceiling Mount Installation

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

- ▶ Screw type: M4\*4
- ▶ Maximum screw length: 11mm
- ▶ Minimum screw length: 8mm



Unit: mm



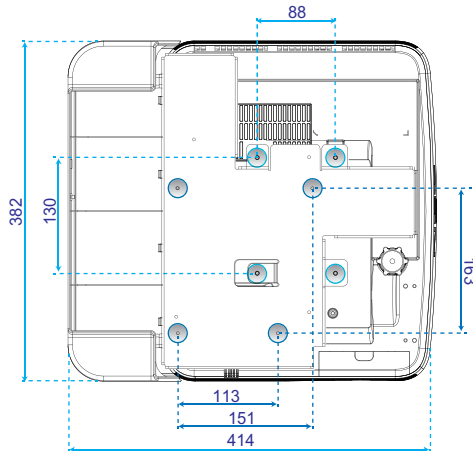
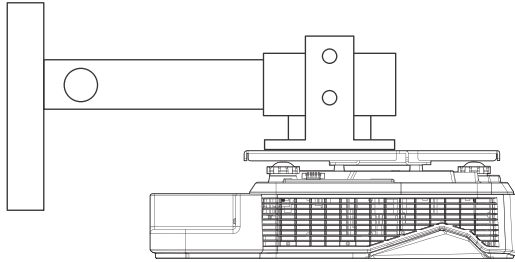
## Wall Mount Installation

Warning:

If you wish to have the projector installed on the wall:

- Do not attempt to install the projector yourself.
- The projector must be installed by qualified technicians in order to ensure proper operation and reduce the risk of bodily injury.
- In addition, the wall must be strong enough to support the projector and the installation must be in accordance with any local building codes.
- Please consult your dealer for more information.

To install NEC's standard wall mount kits with attachment plate and fix by 4 screws.



Unit: mm



Please note that damage resulting from incorrect installation will invalidate the warranty.

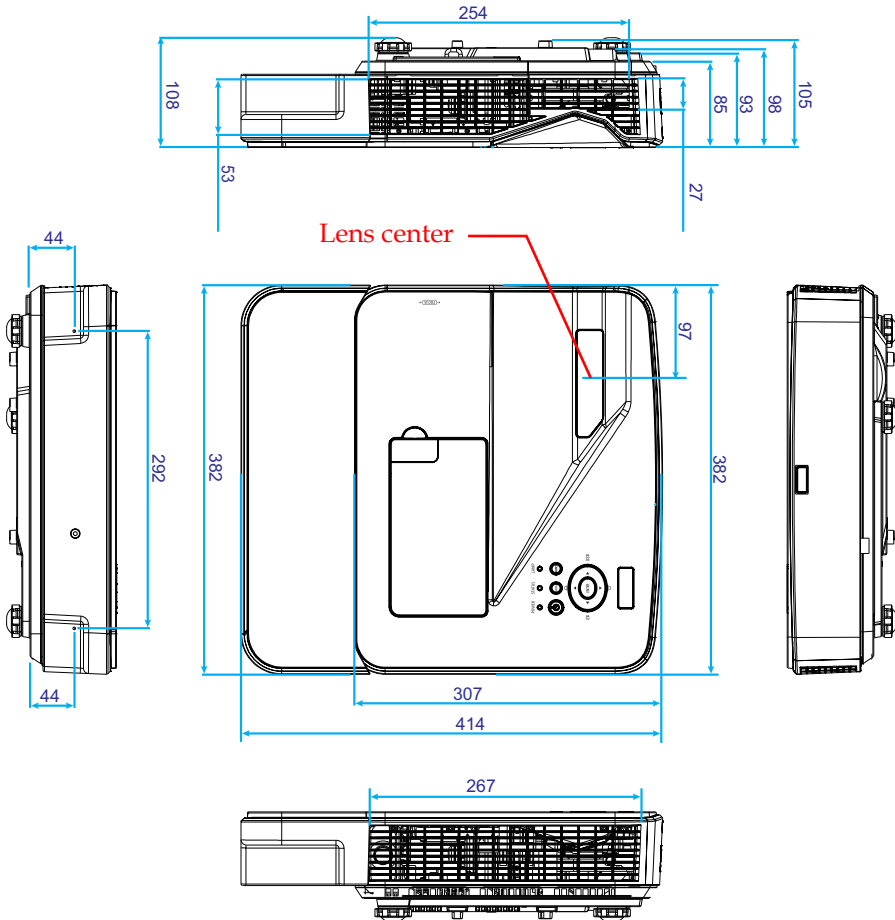


Warning:

Avoid installing the projector near a heat source.

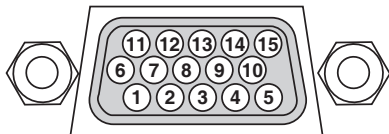
## Cabinet Dimensions

Unit: mm



## Pin Assignments of D-Sub COMPUTER Input Connector

### Mini D-Sub 15 Pin Connector



Signal Level

Video signal : 0.7Vp-p (Analog)

Sync signal : TTL level

Pin No.	RGB Signal (Analog)	YCbCr Signal
1	Red	Cr
2	Green	Y
3	Blue	Cb
4	Ground	
5	Ground	
6	Red Ground	Cr Ground
7	Green Gro	Y Ground
8	Blue Ground	Cb Ground
9	No Connection	
10	Sync Signal Ground	
11	No Connection	
12	Bi-directional DATA (SDA)	
13	Horizontal Sync or Composite Sync	
14	Vertical Sync	
15	Data Clock	

## PC Control Codes and Cable Connection

### PC Control Codes

Function	Code Data							
POWER ON	02H	00H	00H	00H	00H	02H		
POWER OFF	02H	01H	00H	00H	00H	03H		
INPUT SELECT COMPUTER	02H	03H	00H	00H	02H	01H	01H	09H
INPUT SELECT HDMI 1	02H	03H	00H	00H	02H	01H	A1H	A9H
INPUT SELECT HDMI 2	02H	03H	00H	00H	02H	01H	A2H	AAH
INPUT SELECT VIDEO	02H	03H	00H	00H	02H	01H	06H	0EH
PICTURE MUTE ON	02H	10H	00H	00H	00H	12H		
PICTURE MUTE OFF	02H	11H	00H	00H	00H	13H		
SOUND MUTE ON	02H	12H	00H	00H	00H	14H		
SOUND MUTE OFF	02H	13H	00H	00H	00H	15H		

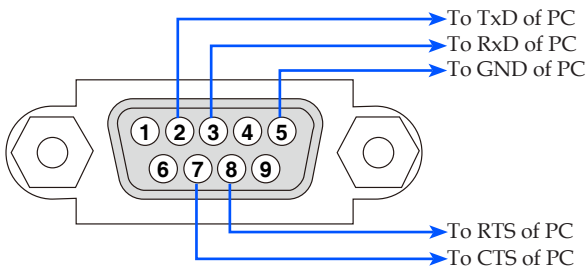
NOTE: Contact your local dealer for a full list of the PC Control Codes if needed.

### Cable Connection

#### Communication Protocol

Baud rate .....38400 bps  
Data length.....8 bits  
Parity .....No parity  
Stop bit.....One bit  
X on/off.....None  
Communications procedure.....Full duplex

### PC Control Connector (D-SUB 9P)



NOTE 1: Pins 1, 4, 6 and 9 are not used.

NOTE 2: Jumper "Request to Send" and "Clear to Send" together on both ends of the cable to simplify cable connection.

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# Troubleshooting Check List

Before contacting your dealer or service personnel, check the following list to be sure repairs are needed also by referring to the "Troubleshooting" section in your user's manual. This checklist below will help us solve your problem more efficiently.

\* Print the following pages.

**Frequency of occurrence**  always  sometimes (How often? \_\_\_\_\_)  other (\_\_\_\_\_)

## Power

---

- No power (POWER indicator does not light green).
  - Power cable's plug is fully inserted into the wall outlet.
  - Lamp cover is installed correctly.
  - Lamp Hours Used (lamp operation hours) was cleared after lamp replacement.
  - No power even though you press and hold the POWER button for a minimum of 1 second.
- Shut down during operation.
  - Power cable's plug is fully inserted into the wall outlet.
  - Lamp cover is installed correctly.
  - Power Management is turned off (only models with the Power Management function).

## Video and Audio

---

- No image is displayed from your PC or video equipment to the projector.
  - Still no image even though you connect the projector to the PC first, then start the PC.
  - Enabling your notebook PC's signal output to the projector.
    - \* A combination of function keys will enable/disable the external display. Usually, the combination of the "Fn" key along with one of the 12 function keys turns the external display on or off.
  - No image (blue background).
  - Still no image even though you press the AUTO ADJUST button.
  - Still no image even though you carry out [RESET] in the projector's menu.
  - Signal cable's plug is fully inserted into the input connector
  - A message appears on the screen. ( \_\_\_\_\_ )
  - The source connected to the projector is active and available.
  - Still no image even though you adjust the brightness and/or the contrast.
  - Input source's resolution and frequency are supported by the projector.
- Image is too dark.
  - Remains unchanged even though you adjust the brightness and/or the contrast.
- Image is distorted.
  - Image appears to be trapezoidal (unchanged even though you carry out the [KEYSTONE] adjustment).
- Parts of the image are lost.
  - Still unchanged even though you press the AUTO ADJUST button.
  - Still unchanged even though you carry out [RESET] in the projector's menu.
- Image is shifted in the vertical or horizontal direction.
  - Horizontal and vertical positions are correctly adjusted on a computer signal.
  - Input source's resolution and frequency are supported by the projector.
  - Some pixels are lost.
- Image is flickering.
  - Still unchanged even though you press the AUTO ADJUST button.
  - Still unchanged even though you carry out [RESET] in the projector's menu.
  - Image shows flickering or color drift on a computer signal.
- Image appears blurry or out of focus.
  - Still unchanged even though you checked the signal's resolution on PC and changed it to projector's native resolution.
  - The throw distance is within 22.2 to 30.6 cm (8.7" to 12.1" ).
  - Still unchanged even though you adjusted the focus.
- No sound.
  - Audio cable is correctly connected to the audio input of the projector.
  - Still unchanged even though you adjusted the volume level.

## Other

---

- Remote control does not work.
  - No obstacles between the sensor of the projector and the remote control.
  - Projector is placed near a fluorescent light that can disturb the infrared remote controls.
  - Batteries are new and are not reversed in installation
- Buttons on the projector cabinet do not work.
  - [CONTROL PANEL LOCK] is not turned on in the menu. Still unchanged even though you press and hold the EXIT button for minimum of 10 seconds.

In the space below please describe your problem in detail.

Information on application and environment where your projector is used

### Projector

Model number:

Serial No.:

Date of purchase:

Lamp operating time (hours):

Eco Mode:  Off  Eco

Information on input signal:

Horizontal synch frequency [                    ] kHz

Vertical synch frequency [                    ] Hz

Synch polarity H  (+)  (-)

V  (+)  (-)

Synch type  Separate  Composite  
 Sync on Green

STATUS Indicator:

Steady light  Red

Flashing light [                    ] cycles

Remote control model number:

### Installation environment

Screen size: inch

Screen type:  White matte  Beads  Polarization  
 Wide angle  High contrast

Throw distance: feet/inch/m

Orientation:  Ceiling mount  Desktop

Power outlet connection:

Connected directly to wall outlet

Connected to power cord extender or other (the number of connected equipment\_\_\_\_\_)

Connected to a power cord reel or other (the number of connected equipment\_\_\_\_\_)

### Computer

Manufacturer:

Model number:

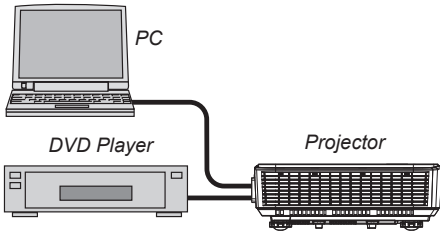
Notebook PC  / Desktop

Native resolution:

Refresh rate:

Video adapter:

Other:



### Signal cable

NEC standard or other manufacturer's cable?

Model number: Length: inch/m

Distribution amplifier

Model number:

Switcher

Model number:

Adapter

Model number:

### Video equipment

VCR, DVD player, Video camera, Video game or other

Manufacturer:

Model number:



# **REGISTER YOUR PROJECTOR!**

**(for residents in the United States, Canada, and Mexico)**

Please take time to register your new projector. This will activate your limited parts and labor warranty and InstaCare service program.

Visit our web site at [www.necdisplay.com](http://www.necdisplay.com), click on support center/register product and submit your completed form online.

Upon receipt, we will send a confirmation letter with all the details you will need to take advantage of fast, reliable warranty and service programs from the industry leader, NEC Display Solutions of America, Inc.

**NEC**