

DLP Projector

PH1202HL/PH1002HL

Installation Manual

NEC Display Solutions, Ltd.

Model No.

NP-PH1202HL, NP-PH1202HLJD, NP-PH1202HL+, NP-PH1002HL+

Introduction

DLP Projector Installation and Adjustment Manual (This document) describes the procedures to install, adjust and maintain the projector PH1202HL/ PH1002HL. For safe and correct installation, adjustment and maintenance of the projector, carefully read this document before considering the layout of the unit and installation. Please keep this document under care by the company who installed or adjusted the projector. This document is intended the readers who have basic knowledge about projector installation. Refer to the user's manual of an applicable projector for basic operation and remarks.

The product name used in this manual

In this manual, the device name is written as listed below. If the function has difference by devices, the product name is written in the text.

PH1202HL/PH1002HL This product or the projector

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- DisplayPort and DisplayPort Compliance Logo are trademarks owned by the Video Electronics Standards Association.



- HDBaseT™ is a trademark of HDBaseT Alliance.



- DLP is a trademark of Texas Instruments.
- Trademark PJLink is a trademark applied for trademark rights in Japan, the United States of America and other countries and areas.
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- CRESTRON and ROOMVIEW are registered trademarks of Crestron Electronics, Inc. in the United States and other countries.
- Ethernet is either a registered trademark or trademark of Fuji Xerox Co., Ltd.
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NOTES

- (1) The contents of this manual may not be reprinted in part or whole without permission.
- (2) The contents of this manual are subject to change without notice.
- (3) Great care has been taken in the preparation of this manual; however, should you notice any questionable points, errors or omissions, please contact us.
- (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 A digital apparatus meets all requirements of the Canadian ICES-003 Standards.

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. 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 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

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CAUTION

- In order to reduce any interference with radio and television reception use a signal cable with ferrite core attached. Use of signal cables without a ferrite core attached may cause interference with radio and television reception.
- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense

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.

For UK only: In UK, a BS approved power cord with moulded plug has a Black (15 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

- Consult your dealer for information about transporting and installing the projector. Do not attempt to transport and 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.
- 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 or cloth, rugs or carpets.
- Do not install and store the projector in the below circumstances. Failure to do so may cause of malfunction.
 - In powerful magnetic fields
 - In corrosive gas environment
 - Outdoors
- 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 cover the lens with the lens cap or equivalent while the projector is on. Doing so can lead to melting of the cap due to the heat emitted from the light output.
- 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.



Do not use the projector with it leaning to the left and right. This may result in a malfunction, however, portrait installation* is possible. Please read the warnings concerning portrait orientation before setting the projector in portrait orientation. (→ page 2)



⚠ 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 enough space between your projector and a wall. (→ page 1)
- 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 200-240V 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.
- Do not look into the light source using optical instruments (such as magnifying glasses and mirrors). Visual impairment could result.
- When turning on the projector, make sure no one within projection range is looking at the lens.



- Keep any items (magnifying glass etc.) out of the light path of the projector. The light path being projected from the lens is extensive, therefore any kind of abnormal objects that can redirect light coming out of the lens, can cause an unpredictable outcome such as a fire or injury to the eyes.

- 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 with the projector.
 - 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.
- Moving the projector requires four people or more. Be sure to firmly grip the front and back handles, then move the projector.
- Turn off the projector and unplug the power cord before cleaning the cabinet.
- 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 terminal for peripheral device wiring that might have excessive voltage.

CAUTION

- Keep hands away from the lens mounting portion while the lens shift is in operation. Failure to do so could result in fingers being pinched between the cabinet and lens cover.
- Do not use the level adjuster for purposes other than originally intended.
- Do not unplug the power cord from the wall outlet or projector when the projector is powered on. Doing so can cause damage to the AC IN terminal of the projector and (or) the prong plug of the power cord.
To turn off the AC power supply when the projector is powered on, use the projector's main power switch, a power strip equipped with a switch, or a breaker.

Precautions when installing or replacing the lens unit sold separately (LENS CALIBRATION)

After installing or replacing the lens unit, press either the LENS CALIBRATION button on the main unit or the INFO/L-CALIB. button while pressing the CTL button on the remote control to carry out [LENS CALIBRATION]. (→ page 26)
By carrying out [LENS CALIBRATION], the adjustment range of the zoom and focus of the [LENS MEMORY] is calibrated.

Contact your dealer to install and replace the lens unit.

Caution on Handling the Optional Lens

When shipping the projector with the lens, remove the lens before shipping the projector. Always attach the dust cap to the lens whenever it is not mounted on the projector. The lens and the lens shift mechanism may encounter damage caused by improper handling during transportation. If you need to remove the lens unit, contact your dealer.

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.

Light Module

1. A light module containing multiple laser diodes is equipped in the product as the light source.
2. These laser diodes are sealed in the light module. No maintenance or service is required for the performance of the light module.
3. End user is not allowed to replace the light module.
4. Contact qualified distributor for light module replacement and further information.

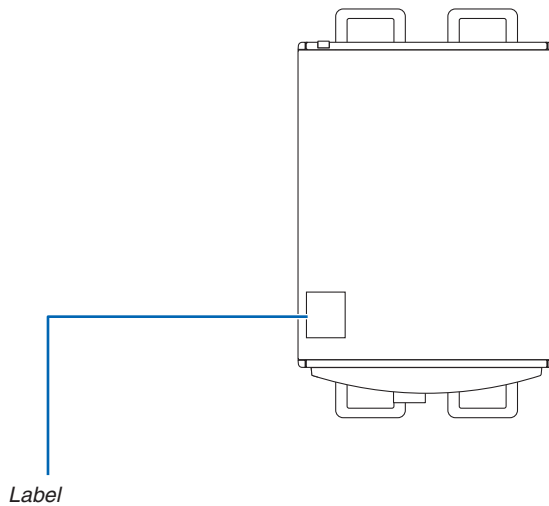
Laser Safety Caution

- The laser module is equipped in this product.
Use of controls or adjustments of procedures other than those specified herein may result in hazardous radiation exposure.
- This product is classified as Class 1 of IEC60825-1 Third edition 2014. Obey the laws and regulations of your country in relation to the installation and management of the device.
Blue pumping laser diodes: Wave length 448 nm, Output power 300 W
Blue laser diodes: Wave length 462 nm, Output power 56 W
- Do not look into the lens while the projector is on. Serious damage to your eyes could result. Pay enough attention to children.
- The below diagram is indicated on the projector.



- Do not look into the light source using optical instruments (such as magnifying glasses and mirrors). Visual impairment could result.
- When turning on the projector, make sure no one within projection range is looking at the lens.
DO NOT STARE INTO THE LENS WHILE IN USE.

- The label is stuck on the below indicated position.





RISK GROUP 3
WARNING
 Possibly hazardous optical radiation emitted from this product.
 Do not look at operating lamp. Eye injury may result.

リスクグループ 3
警告
 強い光が製品から放射される。
 目に悪影響を与える可能性があるがあるのでビームを見ないこと。

GROUPE DE RISQUE 3
AVERTISSEMENT
 Ce produit peut émettre des rayonnements optiques dangereux.
 Ne regardez pas la lampe en fonctionnement. Il pourrait en résulter de graves blessures aux yeux.

RISIKOGRUPPE 3
WARNUNG
 Dieses Produkt emittiert möglicherweise gefährliche optische Strahlung.
 Schauen Sie nicht in die Projektionslampe. Eine Augenverletzung könnte die Folge sein.

ГРУППА РИСКА 3
ПРЕДУПРЕЖДЕНИЕ
 Данное изделие может генерировать оптическое излучение.
 Не смотрите на рабочую лампу. Это может привести к повреждению зрения.

위험군 3
경고
 아마도 이 제품에서 위험한 광 방사선이 방출되었습니다.
 작동 중인 램프를 쳐다보지 마십시오. 눈 부상이 생길 수 있습니다.

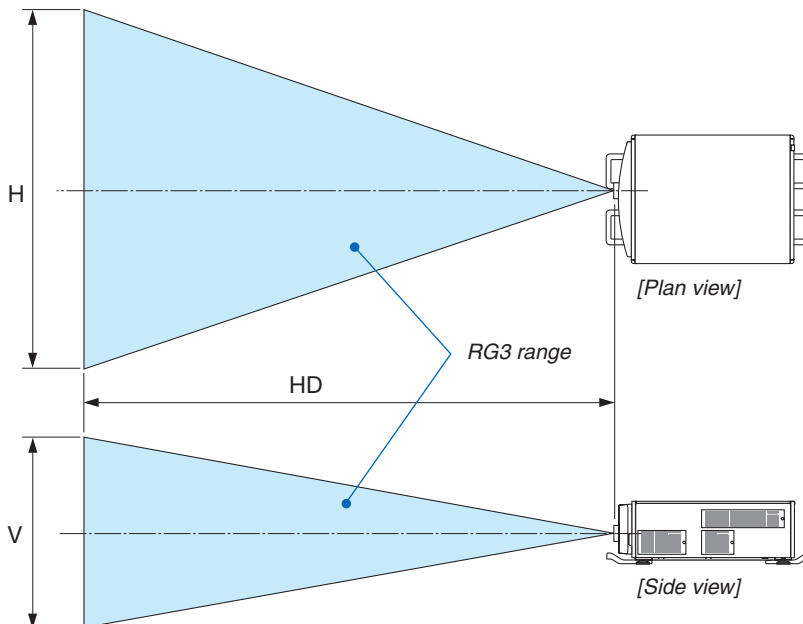
风险等级 3
警告
 本产品会发出可能有害的光辐射。
 请勿直视光束。否则可能导致眼睛受伤。

24L79481

Radiation range of emitted light by the projector (HD: Hazard distance)

- The below table describes the radiation range of emitted light by the projector that is classified as Risk Group 3 (RG3) of IEC62471.
- Please keep within bounds for installing the projector.
Install a barrier for preventing human eyes from entering the RG3 area.
For the barrier installation position, keep horizontal safety zone over 1.5m from the RG3 area.
In case to install the projector over head, keep over 3m distance at least between the floor surface and the RG3 area.

Lens	Zoom	HD(m)	H(m)	V(m)
NP-9LS08ZM1	Wide	0.7	0.79	0.42
	Tele	1.4	1.08	0.57
NP-9LS12ZM1	Wide	1.8	1.41	0.75
	Tele	2.3	1.29	0.68
NP-9LS13ZM1	Wide	1.9	1.36	0.72
	Tele	3.0	1.40	0.74
NP-9LS16ZM1	Wide	2.7	1.62	0.85
	Tele	3.7	1.37	0.72
NP-9LS16Z1	Wide	2.6	1.58	0.83
	Tele	3.4	1.63	0.86
NP-9LS20ZM1	Wide	3.8	1.78	0.94
	Tele	3.0	0.75	0.40
NP-9LS20Z1	Wide	2.8	1.37	0.72
	Tele	3.6	1.32	0.70
NP-9LS40Z NP-9LS40ZM1	Wide	7.8	1.90	1.00
	Tele	10.1	1.59	0.84



* If lens shift is utilized, please consider the shift of projected image according to the volume of lens shift.

Caution

Please heed all precaution for safety.

To install the projector

- For planning the layout of the projector, make sure to take safety measures instructed on the installation manual.
- In order to refuse danger, install either a wall outlet within easy reach for pulling out the power plug in emergency or a device as a breaker to shut down the power supply to the projector.
- Take safety measures preventing human eyes from entering the RG3 area.
- Considering the installation place, select an appropriate lens and secure safety zone that is determined for each lens. For operation on the powered projector as light adjustment, make sure appropriate safety measures have been taken.
- Check the validity of taken security measures if appropriate safety zone based on the installed lens is secured. Periodically check the validity and keep these results.
- Educate the administrator of the projector (operators) about safety before starting to operate the projector.

To use the projector

- Instruct the administrator of the projector (operators) to perform inspections before powering on the projector. (Including the safety check against emitted light by the projector)
- Instruct the administrator of the projector (operators) to be in circumstances able to control the projector whenever the projector is powered on for an emergency.
- Instruct the administrator of the projector (operators) to keep the installation manual, user's manual and inspection records to a place where they can take these documents out easily.
- Instruct them to clarify if the projector is conformed to standards of each country and region.

About High Altitude mode

- Using the projector at highlands can shorten the life of optical components such as the light module.

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.

Turkish RoHS information relevant for Turkish market

EEE Yönetmeliğine Uygundur.

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

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 3D eyeglasses or your 3D compatible content such as Blu-ray Discs, video games, computer's video files and the like.

To avoid any adverse symptoms, heed the following:

- Do not use 3D 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.

Power management function

In order to keep power consumption low, the following power management functions (1) and (2) have been set when shipped from the factory. Please display the on-screen menu and change the settings (1) and (2) according to the aim of using the projector.

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

- When [NORMAL] is selected for [STANDBY MODE], the following terminals and functions will not work:
HDMI OUT terminal, Ethernet/HDBaseT Port, USB Port, LAN functions, Mail Alert function
(→ page 39)

2. **AUTO POWER OFF (Factory preset: 1 hour)**

- When [1:00] is selected for [AUTO POWER OFF], you can enable the projector to automatically turn off in 1 hour if there is no signal received by any input or if no operation is performed.
(→ page 51)

Clearance for Installing the Projector

Allow ample clearance between the projector and its surroundings.

The high temperature exhaust coming out of the device may be sucked into the device again.

Avoid installing the projector in a place where air movement from the HVAC is directed at the projector.

Heated air from the HVAC can be taken in by the projector's intake vent. If this happens, the temperature inside the projector will rise too high causing the over-temperature protector to automatically turn off the projector's power.

- Before setting the projector in portrait orientation, please read page 2.

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1. Before Setting Up Your Projector

1-1. Clearance for Installing the Projector

Allow ample clearance between the projector and its surroundings as shown below.

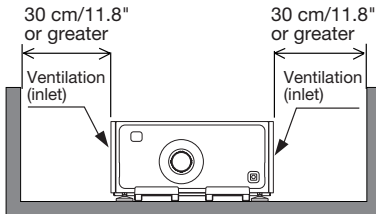
Avoid installing the projector in a place where air movement from the HVAC is directed at the projector.

Heated air from the HVAC can be taken in by the projector's intake vent. If this happens, the temperature inside the projector will rise too high causing the over-temperature protector to automatically turn off the projector's power.

Installation conditions for the projector

Example 1 – If there are walls on both sides of the projector.

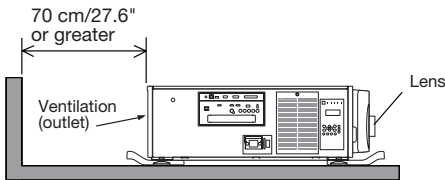
The drawing shows the proper clearance required for the front, back and top of the projector.



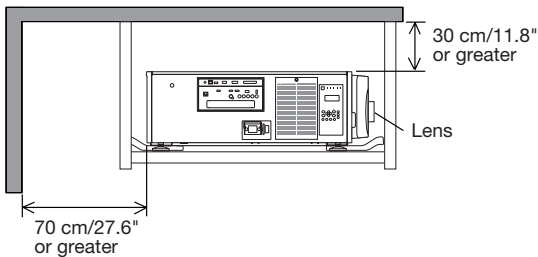
Example 2 – If there is a wall behind the projector.

The drawing shows the proper clearance required for the front, sides and top of the projector.

(1) For floor installation:



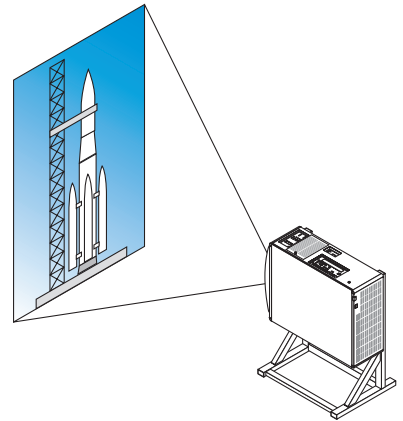
(2) For ceiling mounting:



1-2. Installation for Tilt-free and Portrait projection

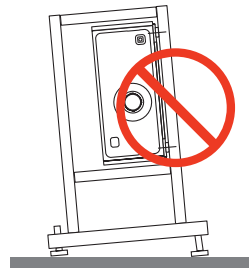
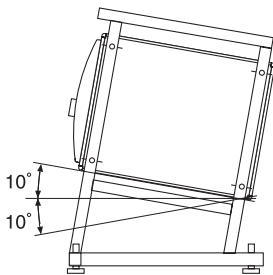
This projector can be set to any angle within a vertical 360° range, however, it cannot be installed with right or left slant besides the portrait projection.

If you install the projector vertically you can project screens from your computer and other sources in portrait orientation.



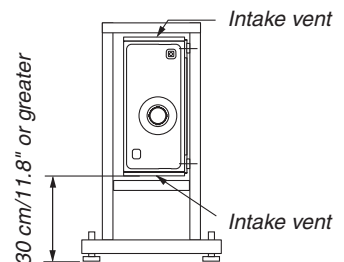
Precautions for the portrait installation

- Do not simply set the projector vertically on the floor or on a table. The projector may fall over, resulting in injury, damage or malfunction. Also the intake vent may become blocked causing the unit's internal temperature to rise resulting in malfunction and risk of fire.
- For portrait installation the intake vents must be installed at the top and bottom. To ensure air flow to the bottom intake vent, a rack to support the unit is necessary. Please hire an installation service provider (for a fee) to make a custom portrait projection stand.
- When installed in portrait orientation the projector can be tilted forward or backward within a range of $\pm 10^\circ$. Tilting the projector forward or backward outside of this range, or tilting it to the left or to the right could cause it to malfunction.



- To ensure air flow, maintain 30 cm/11.8" of space between the intake vent and the installation surface.

(NOTE) In the figure to the right there is plenty of space behind, above, and on either side of the projector unit.



Caution to the installation for the Tilt-free projection

- Do not install the projector in the state of facing up/down or inclined directly on a floor and a table. If the projector falls down, It may cause of malfunction, damage and human injury. If the intake vents are obstructed, the projector inside temperature will increase and it may cause of malfunction and fire.
- Make sure to produce the support metal for the projector as the ceiling mount metal. Please ask the service company about the support metal production. (for a fee)
- In case you need to install the projector in tilted angle, please install the projector by support metals that have enough durability to support the projector for a long time.

Design and manufacturing conditions for a stand and a ceiling mount metal of the projector

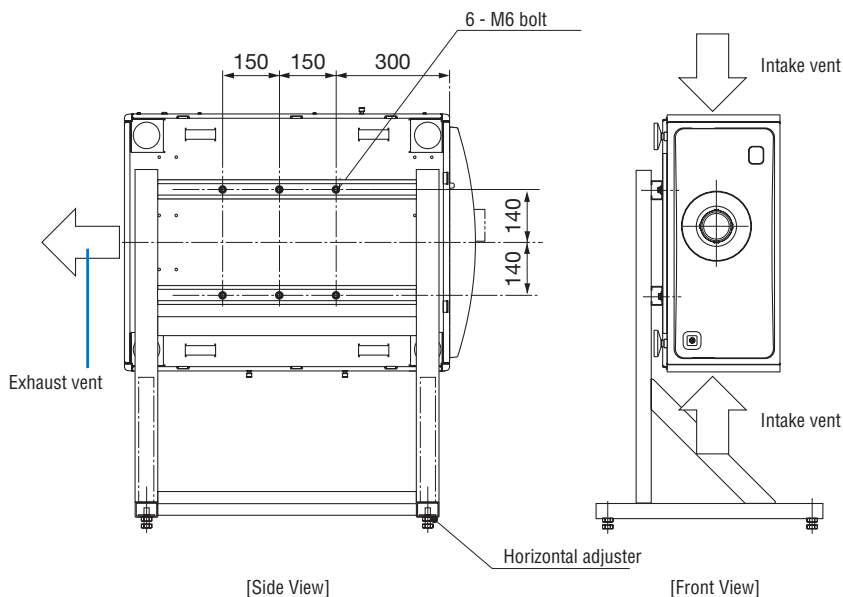
Please hire an installation service provider (for a fee) to design and manufacture customized stand and ceiling mount metal. Please ensure that the design complies with the following conditions:

- There is one intake vent on either side and one exhaust vent at the rear. These should remain unobstructed. Also, secure enough space for easy filter cover removal for filter cleaning.
- Remove the level adjusters or the projector handles in case these hit against the stand. For removing the level adjuster, rotate the level adjuster itself, and for removing the handle, remove the handle fastening screws.
- Fix the stand onto the ceiling mount screw holes (6 positions) on the projector bottom face.
Dimensions of screw hole: for M6 screw Maximum depth 10 mm (Calculate the bolt length depending on the stand design)
- Horizontal adjustment mechanism (for example, bolts and nuts in 4 places)
- Make sure to design the stand not falling over easily.
- Make sure if the projector is fixed on the surface that has enough durability to stand the whole projector weight (the projector weight 68kg plus the lens weight 3kg, i.e., 71kg in total) for a long time.

Referential drawings for the portrait projection

* Figure illustrating the dimensions and conditions (not actual design blueprint).

(Unit: mm)



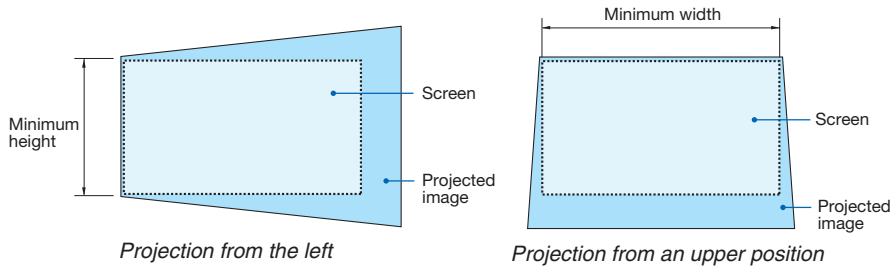
 CAUTION

- When moving the projector, make sure you have at least four people. Attempting to move the projector alone could result in back pain or other injuries.

1-3. Selecting the lens unit

This section provides the guideline information on how to select a screen size, projector mounting position, and type of lens units, which is appropriate for your presentation purposes. Many types of optical lens for the projector are available for separate sale to support various projection range.

Note that all descriptions given in this manual assume that the angle of projection is zero degree. In case of projection from an upper position or from the right or left, it is necessary to calculate the width for the minimum projected image that is a little larger than the screen size.



Throw distance and screen size

Six separate bayonet style lenses can be used on this projector. Refer to the information on this page and use a lens suited for the installation environment (screen size and throw distance). For installation and replacement of lens units contact your dealer.

Each number provided in the table below means the throw distance between the lens surface and the screen.

Lens types and throw distance

unit = m

Screen size	Lens model name					
	NP-9LS08ZM1	NP-9LS12ZM1	NP-9LS13ZM1	NP-9LS16ZM1	NP-9LS20ZM1	NP-9LS40ZM1
60"	—	—	—	—	—	5.8–9.1
70"	1.4–2.1	—	—	—	—	6.7–10.5
100"	2.0–3.0	2.8–4.0	3.1–4.9	3.8–6.3	5.0–9.3	9.6–15.0
120"	2.4–3.6	3.4–4.8	3.7–5.9	4.5–7.6	6.0–11.1	11.5–18.0
150"	3.0–4.5	4.2–6.0	4.7–7.4	5.7–9.5	7.5–13.9	14.3–22.5
200"	4.0–6.0	5.6–8.1	6.2–9.9	7.6–12.7	9.9–18.5	19.0–29.9
250"	5.0–7.5	7.0–10.1	7.8–12.4	9.5–15.9	12.4–23.1	23.8–37.4
300"	6.0–9.0	8.5–12.1	9.4–14.9	11.4–19.1	14.8–27.7	28.5–44.9
350"	7.0–10.6	9.9–14.2	11.0–17.4	13.3–22.3	17.3–32.3	33.3–52.3
400"	8.0–12.1	11.3–16.2	12.5–19.8	15.2–25.5	19.8–36.9	38.0–59.8
450"	9.0–13.6	12.7–18.2	14.1–22.4	17.1–28.9	22.2–41.5	42.7–67.2
500"	10.0–15.1	14.1–20.2	15.7–24.8	19.0–31.9	24.7–46.1	47.5–74.7
550"	11.1–16.6	—	—	—	—	—
600"	12.1–18.1	—	—	—	—	—

TIP

- Calculation of the throw distance from the screen size

NP-9LS08ZM1 lens throw distance (m) = $H \times 0.90$ to $H \times 1.35$: 1.4 m (min.) to 18.1 m (max.)

NP-9LS12ZM1 lens throw distance (m) = $H \times 1.28$ to $H \times 1.83$: 2.8 m (min.) to 20.2 m (max.)

NP-9LS13ZM1 lens throw distance (m) = $H \times 1.42$ to $H \times 2.24$: 3.1 m (min.) to 24.8 m (max.)

NP-9LS16ZM1 lens throw distance (m) = $H \times 1.73$ to $H \times 2.88$: 3.8 m (min.) to 31.9 m (max.)

NP-9LS20ZM1 lens throw distance (m) = $H \times 2.23$ to $H \times 4.16$: 5.0 m (min.) to 46.1 m (max.)

NP-9LS40ZM1 lens throw distance (m) = $H \times 4.34$ to $H \times 6.76$: 5.8 m (min.) to 74.7 m (max.)

"H" (Horizontal) refers to the screen width.

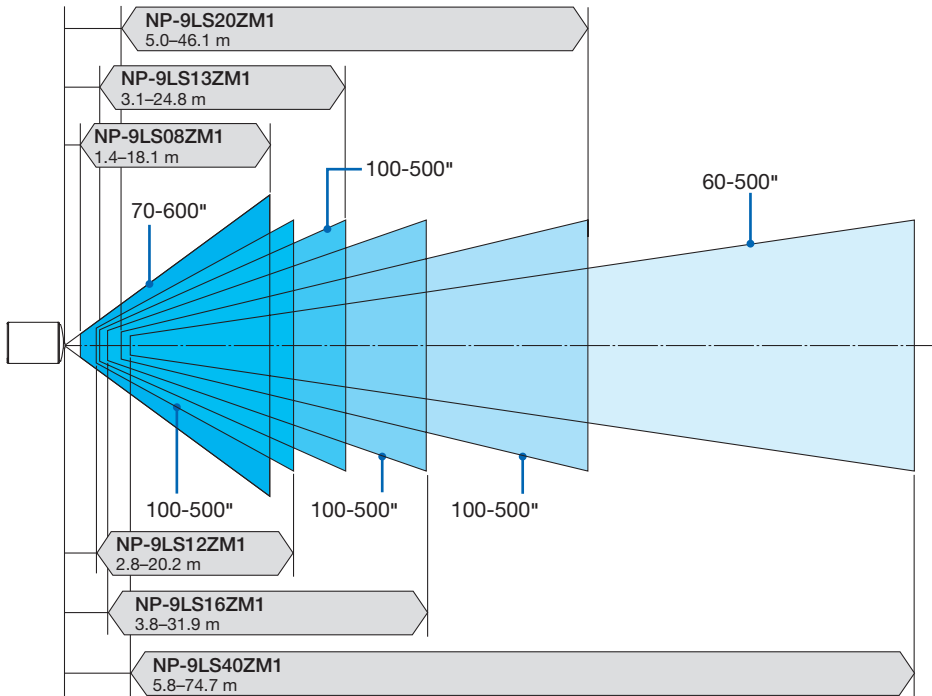
* Figures differ by several % with the table above because the calculation is approximate.

Ex.: Throw distance when projecting on a 300" screen using the NP-9LS13ZM1 lens:

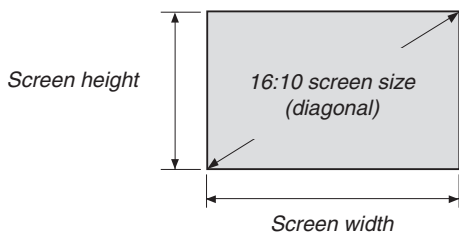
According to the "Tables of screen sizes and dimensions" (→ page 6), H (screen width) = 664.1 cm.

The throw distance is $6.641 \text{ cm} \times 1.42$ to $6.641 \text{ cm} \times 2.24 = 9.430 \text{ cm}$ to 14.876 cm (because of the zoom lens).

Projection range for the different lenses



Tables of screen sizes and dimensions



Size (inches)	Screen width		Screen height	
	(inches)	(cm)	(inches)	(cm)
60	52	132.8	29	74.7
70	61	155.0	34	87.2
100	87	221.4	49	124.5
150	131	332.1	74	186.8
200	174	442.8	98	249.1
250	218	553.5	123	311.3
300	261	664.1	147	373.6
350	305	774.8	172	435.8
400	349	885.5	196	498.1
450	392	996.2	221	560.4
500	436	1106.9	245	622.6
550	479	1217.6	270	684.9
600	523	1328.3	294	747.2

Lens shifting range

This projector is equipped with a lens shift function for adjusting the position of the projected image by using the LENS SHIFT buttons (→ page 31). The lens can be shifted within the range shown below.

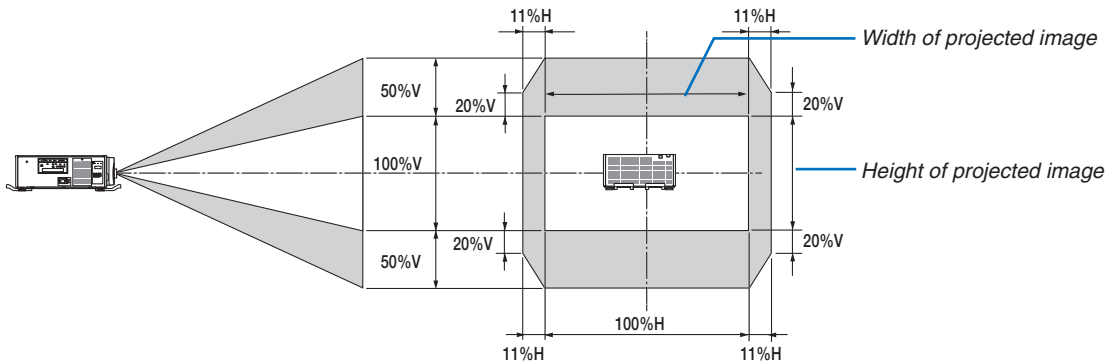
NOTE:

- Please do not use the lens shift function when projecting portrait images. Please use it with the lens in the center.

Legend: V “Vertical” refers to the screen height and H “Horizontal” refers to the screen width. The lens shift range is expressed as a ratio of height and width, respectively.

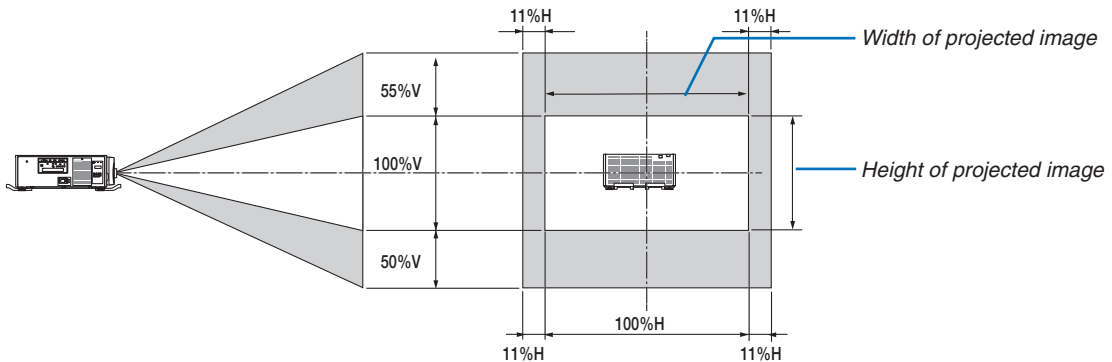
Compatible lens units

NP-9LS08ZM1, NP-9LS12ZM1, NP-9LS13ZM1, NP-9LS16ZM1, NP-9LS20ZM1



Compatible lens unit

NP-9LS40ZM1



* The lens shift range is the same for ceiling installation.

(Example calculation) If projecting on a 300 inch screen using an NP-9LS13ZM1 lens unit

According to the “Table of screen sizes and dimensions” (→ page 6), $H = 261.5''/664.1 \text{ cm}$, $V = 147.1''/373.6 \text{ cm}$.

Adjustment range in the vertical direction: the projected image can be moved upwards $0.5 \times 147.1''/373.6 \text{ cm} \approx 73.6''/187 \text{ cm}$, downwards approximately $73.6''/187 \text{ cm}$ (when the lens is at the center position). Adjustment range in the horizontal direction: the projected image can be moved to the left $0.11 \times 261.5''/664.1 \text{ cm} \approx 28.7''/73 \text{ cm}$, to the right approximately $28.7''/73 \text{ cm}$.

* Figures differ by several % because the calculation is approximate.

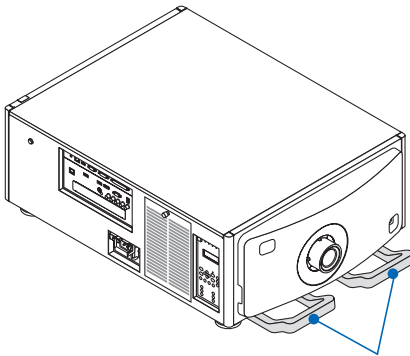
1-4. Carrying the projector

When moving the projector, it should be carried by holding the handles on the base of the unit by four or more people.

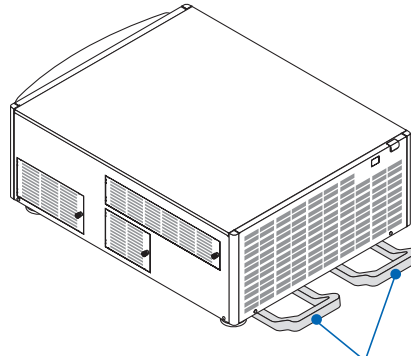


WARNING:

When moving the projector, first turn off the power and always disconnect the power plug from the electrical outlet, and check that all of the connecting cables between equipment and the lenses have been removed.



Handle for transportation (front)



Handle for transportation (rear)

1-5. List of used tools

The tools used to install the projector and the laser unit are listed below.

Lens unit

Tool	Main application
Service key	Mounting and removing the lens cover (supplied with the projector)

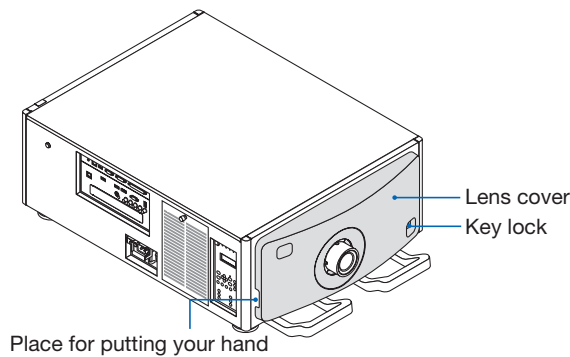
Option board

Tool	Main application
Phillips head screwdriver (No.2)	Installation and removal of the optional board

1-6. Mounting / Removing the lens cover

This section provides guideline information on how to mount and remove covers on the projector.

Name of the cover



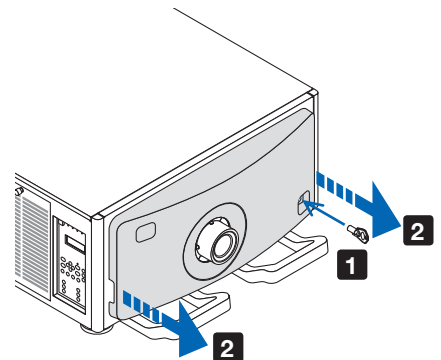
NOTE:

- The lens cover equips the key lock. The service key is required to mount or remove the lens cover.
- Once the lens cover is removed, the protective circuit is activated.
Make sure to mount the lens cover securely. The set metals are equipped also at the lens left and right sides. Push the sides of lens for mounting the lens cover securely.
- Do not power on the projector without mounting the lens cover.
- When removing or installing the lens cover, return the position of the lens to the center before turning off the power to the projector (See page 31).

Preparation: Service key (supplied with the projector)

1. Unlock the lens cover.

Unlock the cover using the service key.



2. Remove the lens cover.

The lens cover is secured to the projector body by two claws each at the cover top and bottom and one claw at the side of lens.

Hold the cover sides and pull toward you.



* Lens cover removed condition

This completes removing the lens cover. To mount the cover, perform the removal procedure in reverse. Make sure to lock the key. If the cover is not properly mounted, an error may occur. Securely push all five claws into the position.

2. Setting Up Your Projector

2-1. Setup Procedure

Set up the projector according to the procedure below. This chapter describes the installation of procedure until turning on of the power.

Step 1

- *Install the projector (→ page 11)*



Step 2

- *Connect the power cord to the projector (→ page 17)*



Step 3

- *Mounting the Lens Unit (→ page 19)*



Step 4

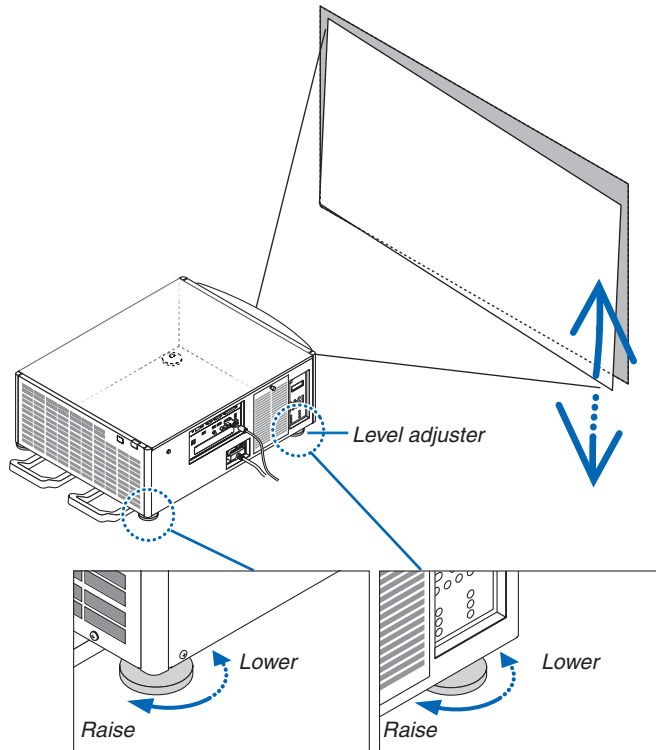
- *Mounting the option boards (→ page 22)*

2-2. Installing the projector

2-2-1. Adjustment of the projector's settings (Level adjusters)

The projector must be placed square to the screen otherwise keystone distortion may appear on the screen. For setting the projector perpendicular to the screen when viewed from the side, utilizing the level adjusters equipped at each corner of the projector bottom. Maximum Adjustable length of the level adjuster is 10 mm/0.39".

Example for adjustment



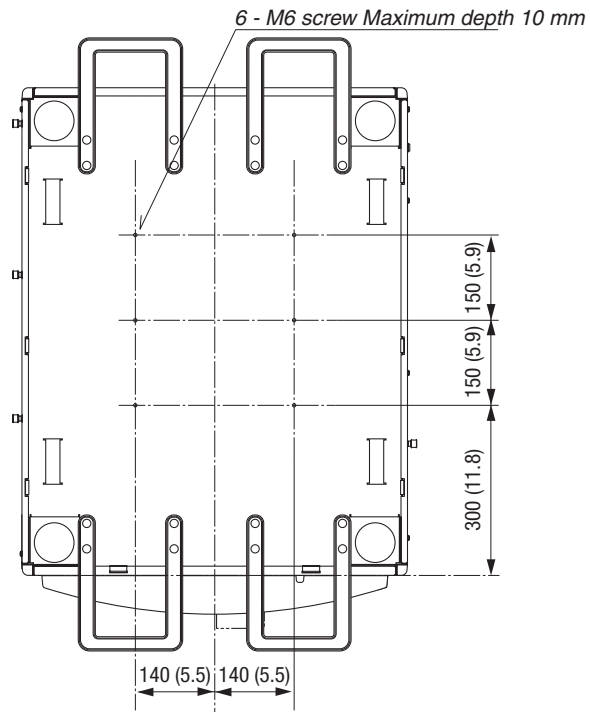
NOTE:

- Do not lengthen each level adjuster longer than 10 mm/0.39". The force of doing so may cause the level adjuster to come off, resulting in damage to the projector.
 - Pay attention to lengthen or shorten two level adjusters at front at the same time. Same for the rear adjusters, otherwise, the weight of the projector is loaded on one level adjuster and it may cause of damage to it.
-

2-2-2. Install the projector on the ceiling

Refer the below indicated specifications in order to install the projector on the ceiling.

Unit: mm (inch)



2-2-3. Multi-Screen Projection

Things that can be done using multi-screen projection

This projector can be used singly or arranged in multiple units for multi-screen projection. We will introduce an example using two projection screens here.

Case 1

Using a single projector to project two types of videos at the same time [PIP/PICTURE BY PICTURE]

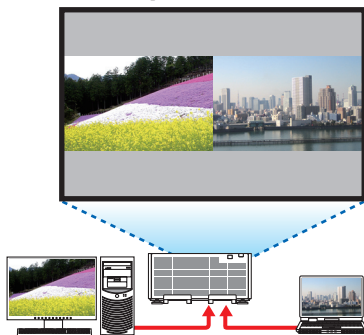
Case 2

Using four projectors (resolution: FULL HD) to project video with a resolution of 3840×2160 pixels [TILING]

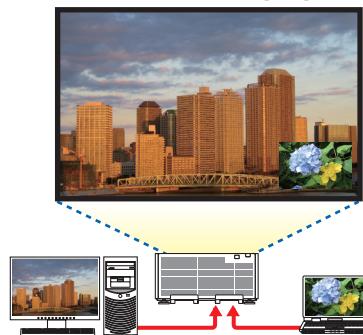
Case 1. Using a single projector to project two types of videos [PIP/PICTURE BY PICTURE]

Connection example and projection image

In the case of [PICTURE BY PICTURE]



In the case of [PIP]

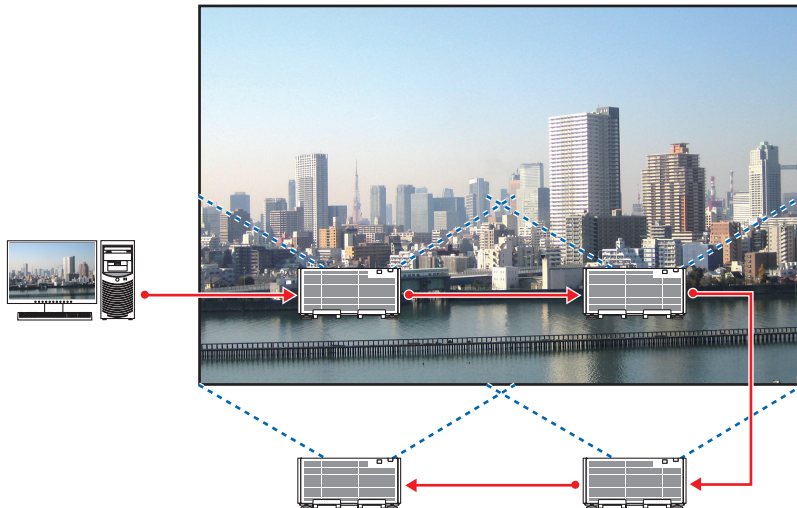


On-screen menu operations

Display [DISPLAY] → [PIP/PICTURE BY PICTURE] → [MODE] screen in the on-screen menu and select [PIP] or [PICTURE BY PICTURE].

Case 2. Using four projectors (resolution: FULL HD) to project videos with a resolution of 3840 × 2160 pixels [TILING]

Connection example and projection image



On-screen menu operations

1 *Four similar videos are displayed when four projectors are projected.*

Please request the dealer to adjust the projection position of each projector.



2. Setting Up Your Projector

2 Operate the on-screen menu using the four respective projectors to divide the image into four portions.

Display [DISPLAY] → [MULTI SCREEN] → [PICTURE SETTING] Screen in the on-screen menu and select [TILING].

(1) In the screen for setting the number of horizontal units, select [2 UNITS]. (number of units in the horizontal direction)

(2) In the screen for setting the number of vertical units, select [2 UNITS]. (number of units in the vertical direction)

(3) In the screen for setting the horizontal order, select [1st UNIT] or [2nd UNIT].

(look at the screens, the one on the left is the [1st UNIT] while the one on the right is the [2nd UNIT])

(4) In the screen for setting the vertical order, select the [1st UNIT] or the [2nd UNIT].

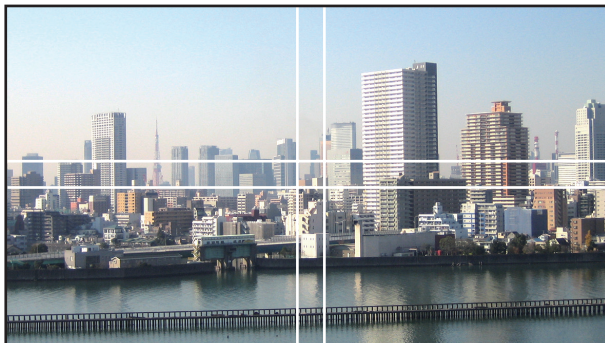
(look at the screens, the one at the top is the [1st UNIT] while the one at the bottom is the [2nd UNIT])



3 Adjust the lens shift of each projector to fine-tune the boundaries of the screen.

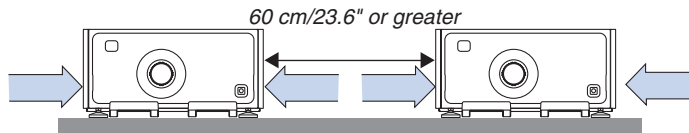
For further fine-tuning, adjust using [DISPLAY] → [EDGE BLENDING] in the on-screen menu for each projector.

For details, please refer to User's Manual "4-3 Displaying a Picture Using [EDGE BLENDING]".



Things to note when installing projectors

- Leave 60 cm/23.6" or over space between the projectors when projectors are installed side by side, so that the intake vents of the projectors are not obstructed. In addition, leave a space of at least 30 cm/11.8" between the intake vent and the wall and at least 70 cm/27.6" between the exhaust vent and the wall. When the air intake and discharge outlet are obstructed, the temperature inside the projector will rise and this may result in a malfunction.

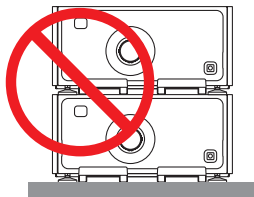


- Do not directly stack projector units.



WARNING

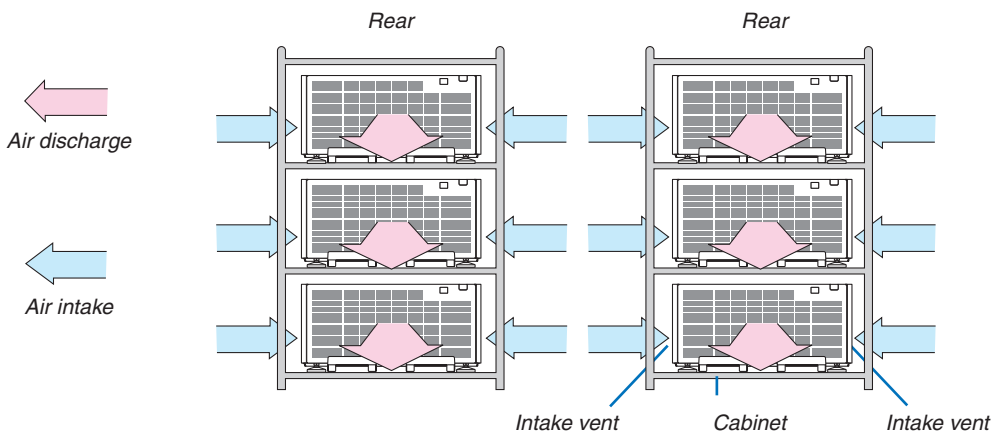
Projectors stacked directly could fall and cause injury. The projector(s) could also become damaged or broken.



- Example of multiple projectors installed together

When using multiple projectors together for multi screen projection, be sure to set them up in a specialized projector cabinet like the one that follows.

[Installation example]



WARNING

Please request the dealer for special installation services such as when mounting the projector to the ceiling. Never carry out the installation by yourself. The projector may fall down and result in injury. Please use a sturdy cabinet that can withstand the weight of the projector for the installation. Please do not pile up the projectors directly on top of one another.

NOTE:

- For the range of the projection distance, please refer to "Throw distance and screen size". (→ page 5)

2-3. Connecting the Power Cord

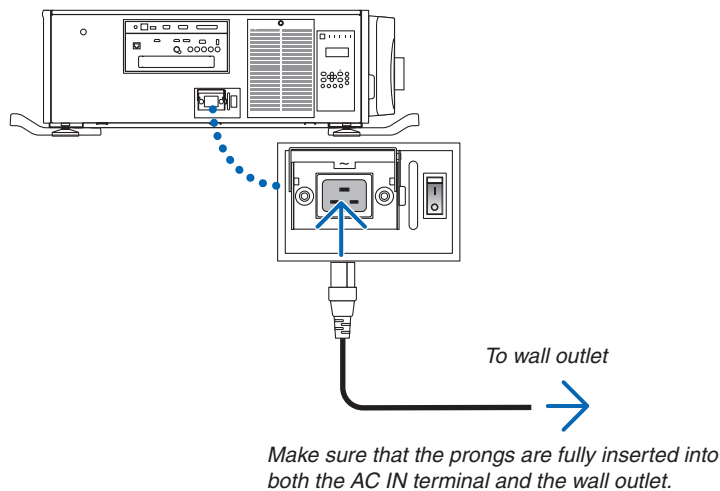
Connect the supplied power cord to the projector.

First connect the supplied power cord's three-pin plug to the AC IN terminal of the projector, and then connect the other plug of the supplied power cord in the wall outlet.

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.

Important Information:

- When plugging in or unplugging the supplied power cord, make sure that the main power switch is pushed to the off [O] position. Failure to do so may cause damage to the projector.
- Do not use a three-phase power supply. Doing so may cause malfunction.



This projector's electrical standard is as follows:

AC Power voltage	AC200V-240V Single phase 50/60Hz
Standard input current	9.2A

Do not use this projector out of the standard range



CAUTION:

Parts of the projector may become temporarily heated if the projector is turned off with the POWER button or if the AC power supply is disconnected during normal projector operation. Use caution when picking up the projector.

Using the Power Cord Fixing Metal

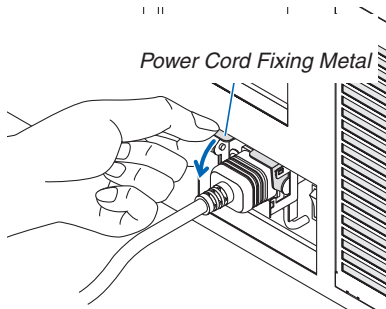
To prevent the power cord from accidentally removing from the AC IN of the projector, attach the power cord fixing metal.

CAUTION

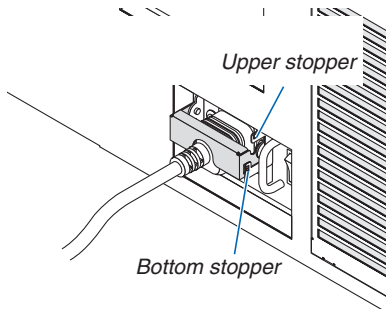
- To prevent the power cord from coming loose, make sure that all the prongs of the power cord are fully inserted into the AC IN terminal of the projector before using the power cord fixing metal. A loose contact of the power cord may cause a fire or electric shock.

Attaching the power cord fixing metal

1. **Pinch and pull out the power cord fixing metal flap that is housed over the AC IN terminal.**



2. **Pull down the fixing metal flap over the power code until the fixing metal fits into the bottom stopper.**



For releasing the fixing metal flap, pull it up until the fixing metal fits into the upper stopper.

2-4. Mounting the Lens Unit

MODEL	Magnification
NP-9LS08ZM1	0.90 - 1.35
NP-9LS12ZM1	1.27 - 1.82
NP-9LS13ZM1	1.41 - 1.82
NP-9LS16ZM1	1.71 - 2.87
NP-9LS20ZM1	2.25 - 4.18
NP-9LS40ZM1	4.31 - 6.77

NOTE:

- The other NEC optional lenses are not available on this model.
- The projector and lenses are made of precision parts. Do not subject them to shock or excessive forces.
- Remove the lens unit when moving the projector. If not, the lens could be subject to shock while the projector is being moved, damaging the lens and the lens shift mechanism.
- When removing or installing the lens unit, return the position of the lens to the center before turning off the power to the projector.
- When installing or removing the lens unit, first confirm that the main power switch to the projector is off, and then disconnect the AC power supply. After the AC power supply has been disconnected, allow the projector to sufficiently cool before starting this work.
 - Never touch the lens surface while the projector is operating.
 - Be very careful not to let dirt, grease, etc., on the lens surface and not to scratch the lens surface.
 - Perform these operations on a flat surface over a piece of cloth, etc., to prevent the lens from getting scratched.
 - When leaving the lens off the projector for long periods of time, mount Dust-proof cushion on the projector to prevent dust or dirt from getting inside.
- Never turn on the light source without mounting the lens. It may cause of serious damage to your eyes by strong light.

Since NP-PH1202HL is a laser projector, we do not release the procedure to mount an optional lens, i.e., mount and adjustment of an optional lens must be performed by a qualified technician.

NP-9LS08ZM1 is used in the explanation. For other lens units, please take same procedures to mount, however, the lens hood is equipped on NP-9LS08ZM1 exclusively, the procedure to mounting/removing the lens hood is not required for others. At the same time, the image adjustment mechanism by manual besides the focus adjustment is also equipped on NP-9LS08ZM1.

Lens unit mounting method

Preparation: Removing the lens cover (→ see page 9)

NOTE:

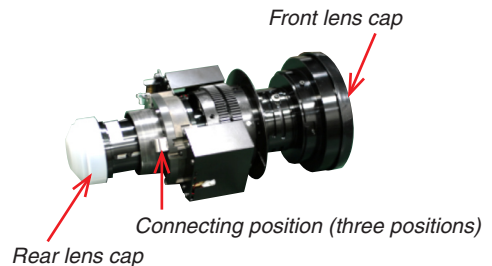
- Once the lens covers are removed, it will activate the protection circuit. After mounting the lens, securely install the lens cover.

* NP-9LS08ZM1 is used on the explanatory illustration.

1. Remove the front and rear lens caps on the lens unit:

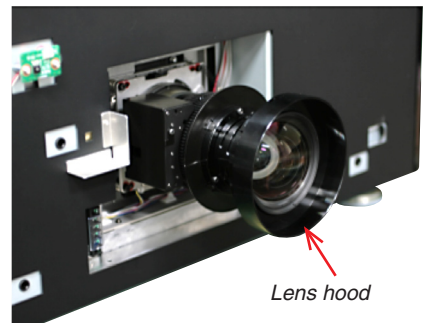
NOTE:

- Pay enough attention not to touch the lens surface, it may be cause of soil and scratch damage.



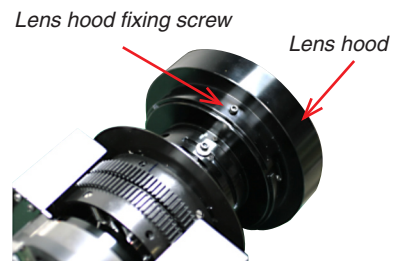
2. Mount the lens unit onto the projector.

- ① Align the connecting positions of the lens unit to the projector connector socket and insert the lens unit straight.
- ② Turn the optional lens clockwise until click sound is heard, the optional lens is mounted on the projector securely.



3. Remove the lens hood. (For NP-9LS08ZM1 only)

- ① Remove the lens hood fixing screw by a 2.5mm hexagon headed driver.
- ② Turn the lens hood and remove it from the optional lens.



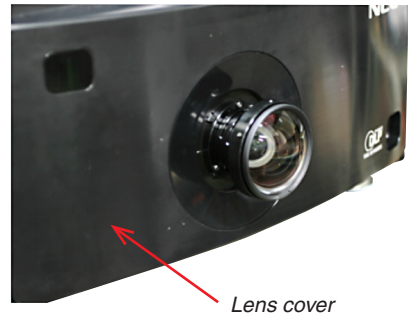
Condition without the lens hood



4. Install the lens cover onto the projector.

NOTE:

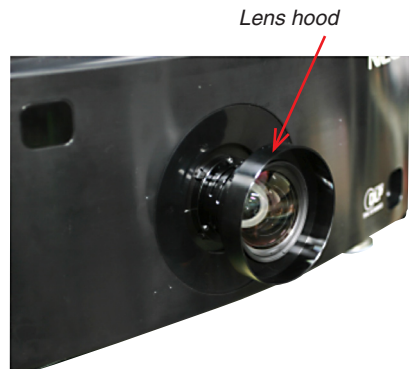
- If NP-9LS08ZM1 is used on your projector, pay enough attention since the lens is exposed.
- If the cover is not installed properly, error will be issued. Securely set 5 claws into the position on the projector.



5. Mount the lens hood. (For NP-9LS08ZM1 only)

NOTE:

- Make sure to mount the lens hood for protecting the lens. Turn the lens hood for mounting and fasten it by the fixing screw.



6. Lock the lens cover using the service key.

Lens unit removal method

NOTE:

- Power off the projector and pull out the power plug from the wall outlet.
- Wait for a certain time to completely cool down the projector and then remove the lens cover.

Perform the mounting procedures reversely for removing the lens unit.

- For removing the lens unit from the projector, press down and hold the release lever, turn the lens unit counter-clockwise by its turn end and then slowly pull the unit out straight.



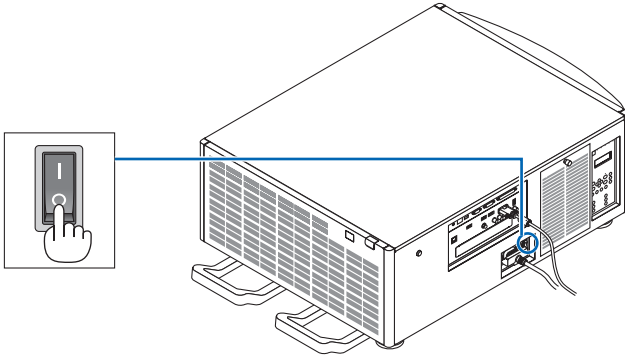
2-5. Mounting the Optional Board (sold separately)

CAUTION

Before mounting or removing the optional board, be sure to turn off the projector, wait for the fans to stop and turn off the main power switch.

Tool needed: Phillips screwdriver (plus-head)

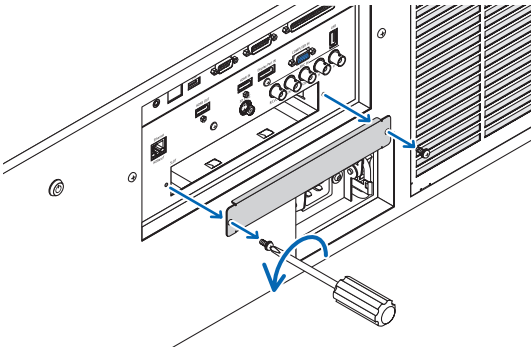
1. Turn off the main power switch of the projector.



2. Loosen the two screws on the SLOT cover of the terminals.

Remove the two screws and the SLOT cover.

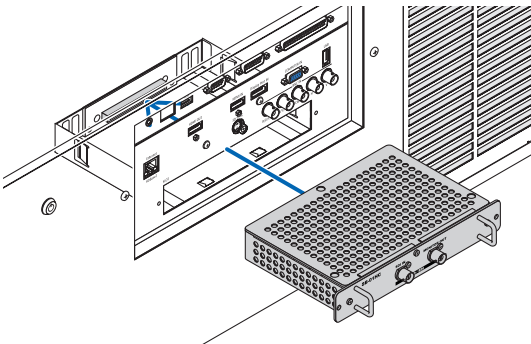
NOTE: Keep the two screws and the slot cover.



3. Insert the optional board into the slot.

Make sure that the board is inserted into the slot in the correct orientation.

Incorrect orientation may cause miscommunication between the optional board and projector.

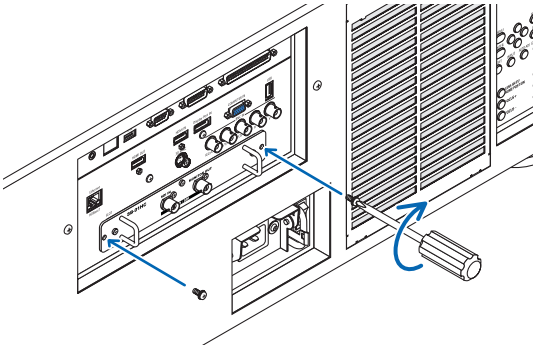


4. Tighten the two screws on both sides of the slot.

- Be sure to tighten the screws.

This will complete installation of the optional board.

To select the optional board source, select SLOT as the input.



NOTE:

- Mounting the optional board may cause the fans to run in the standby mode for the purpose of cooling depending on the optional board. The fan speed may also increase in order to cool the projector properly. Both of these instances are considered normal and not a malfunction of the projector.

3. Projector Adjustment and Connecting

3-1. Flow of Adjustment and Connecting

Perform the adjustment and connection of the projector according to the the following procedure

Step 1

- *Turning on the Projector* (→ [page 25](#))



Step 2

- *Selecting the projector orientation* (→ [page 28](#))



Step 3

- *Adjusting the Picture Size and Position* (→ [page 29](#))

Display the test pattern to adjust the screen size, screen ratio and focus.



Step 4

- *Connecting to Other Equipments* (→ [page 35](#))



Step 5

- *Optimizing Computer Signal Automatically* (→ [page 46](#))

This chapter explains the adjustment and connection of the projector with Steps from 1 to 5.
The adjustment and connection of the projector is completed by performing all steps in order

3-2. Turning on the Projector

NOTE:

- The projector has two power switches: A main power switch and a POWER button (POWER ON and OFF on the remote control)

• **Turning on the projector:**

1. **Press the main power switch to the ON position (I).**

The projector will go into standby mode.

2. **Press the POWER button .**

The projector will become ready to use.

• **Turning off the projector:**

1. **Press the POWER button.**

The confirmation message will be displayed.

2. **Press the POWER button again.**

The projector will go into standby mode.

3. **Press the main power switch to the OFF position (O).**

The projector will be turned off.

1. **Press the main power switch to the ON position (I).**

The POWER indicator lights up red.*

* This indicates that the STANDBY mode is in [NORMAL] setting.

- The buzzer sound is released when [NOTIFICATION SETTING] for [BUZZER] is ON.

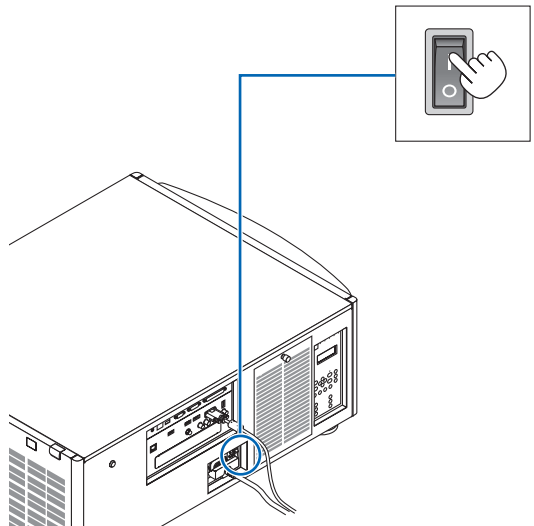


WARNING

The projector produces a strong light. When turning on the power, make sure no one within projection range is looking at the lens.

NOTE:

- The [STANDBY MODE] setting will be disabled and the projector will go into the sleep mode when the network service is utilized or the projector receives HDBaseT signal. In the sleep mode, the fans in the projector sometimes rotate for the purpose of interior parts protection.



3. Projector Adjustment and Connecting

2. Press the (POWER) button on the projector cabinet or the POWER ON button on the remote control.

The POWER indicator goes from a steady red light to a flashing blue light, and the picture is projected on the screen.

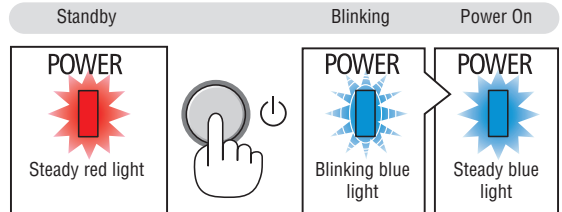
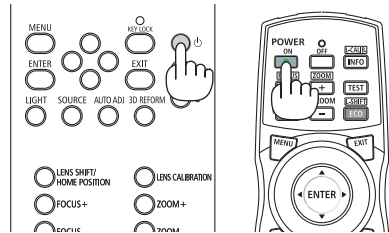
- If using the remote control, press the POWER ON button.
- When there is no signal the unit will project a blue screen (factory default menu settings).
- If the picture is blurry, adjust the screen focus. (→ page 33)
- When it is dark press the  (lights) button. The indicator panel backlight and the LED lamp on the right side of the projector will turn on.

TIP:

- The unit has a Power On Shutter function that allows the light source to turn off even when connected to a power source. (→ page 49)
- Pressing the button will not activate the unit when the KEY LOCK indicator is flashing orange. (→ page 61)
- When the message "PROJECTOR IS LOCKED! ENTER YOUR PASSWORD." is displayed, it means that the [SECURITY] feature is turned on.

After you turn on your projector, ensure that the computer or video source is turned on.

NOTE: The blue screen ([BLUE] background) is displayed when no signal is being input (by factory default menu settings).

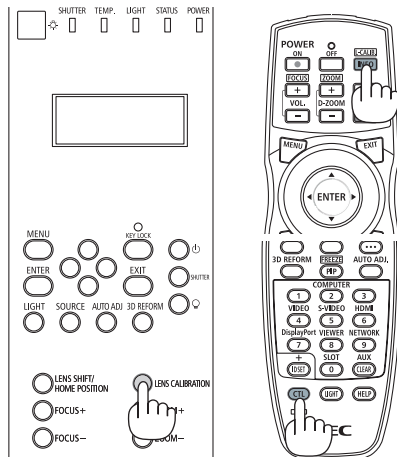


Performing Lens Calibration

- After installing or replacing the lens unit (below *) sold separately, press the LENS CALIBRATION button on the projector, or hold down the CTL button on the remote control then press the INFO/L-CALIB. button to carry out [LENS CALIBRATION].

By carrying out [LENS CALIBRATION], the adjustment range of the zoom and focus of the [LENS MEMORY] is calibrated.

If you need to install or replace the lens unit, contact your dealer and have them do it for you.

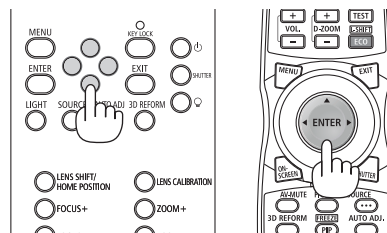


Note on Startup screen (Menu Language Select screen)

When you first turn on the projector, you will get the Startup menu. This menu gives you the opportunity to select one of the 29 menu languages.

To select a menu language, follow these steps:

1. Use the ▲, ▼, ◀ or ▶ button to select one of the 29 languages from the menu.

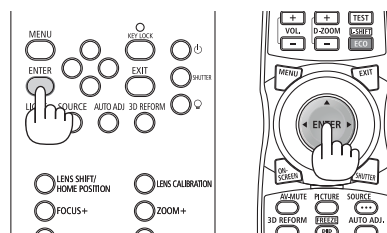


2. Press the ENTER button to execute the selection.

After this has been done, you can proceed to the menu operation.

If you want, you can select the menu language later.

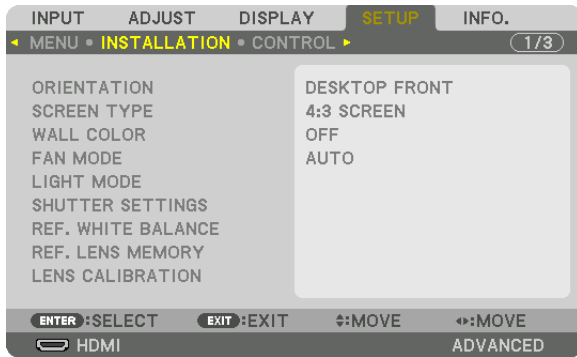
(→ [LANGUAGE] on page 49)



NOTE:

- When the KEY LOCK indicator is flashing, that means [CONTROL PANEL LOCK] has been set and pressing the ⏻ button will not cause the unit to power-on. Release [CONTROL PANEL LOCK]. (→ page 62)
- While the POWER indicator is blinking blue in short cycles, the power cannot be turned off by using the power button. (While the POWER indicator is blinking blue in long cycles, the OFF TIMER is functioned and the power can be turned off.)

3-3. Selecting the projector orientation

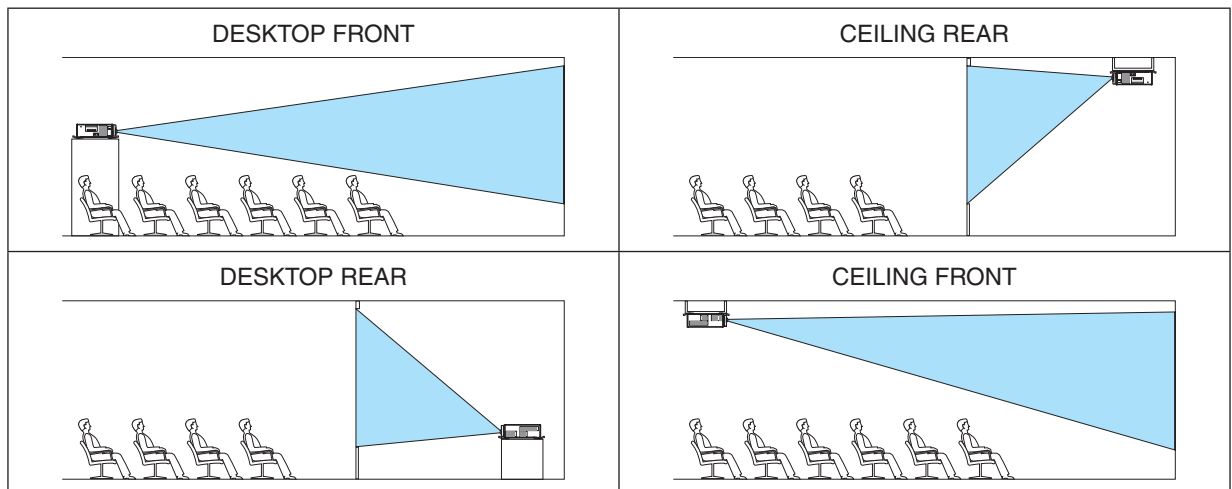


Selecting Projector Orientation [ORIENTATION]

This reorients your image for your type of projection. The options are: desktop front projection, ceiling rear projection, desktop rear projection, and ceiling front projection.

NOTE:

- Please consult the dealer if you require special installation services e.g. when mounting the projector to a ceiling. Never install the projector on your own. This may result in the projector falling down and causing injury to people.

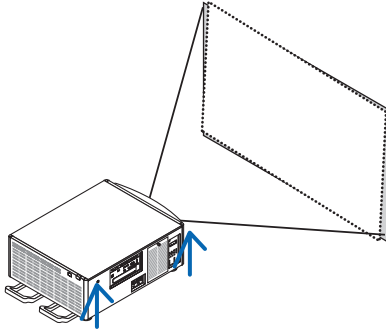


3-4. Adjusting the Picture Size and Position

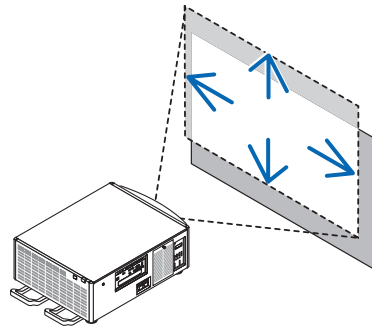
Use the lens shift dial, the level adjuster lever, the zoom lever/zoom ring and the focus ring to adjust the picture size and position.

In this chapter drawings and cables are omitted for clarity.

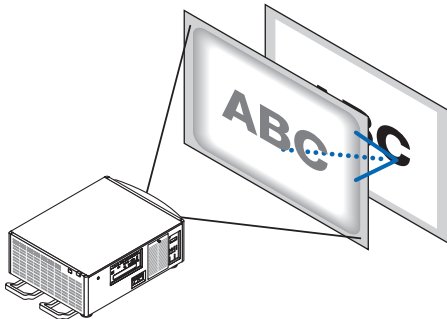
Adjusting the projector's settings
[Level adjuster]
(→ page 30)



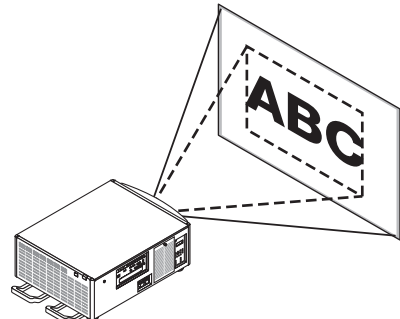
Adjusting the projected image's vertical and horizontal position
[Lens shift]
(→ page 31)



Adjusting the focus
[Focus]
(→ page 33)



Finely adjusting the size of an image
[Zoom]
(→ page 33)



TIP:

- Built-in test patterns can be conveniently used for adjusting the picture size and position. (→ page 47)
A press of the TEST button will display the test pattern. The ◀ or ▶ button can select one test pattern. To close the test pattern, change the source to another.

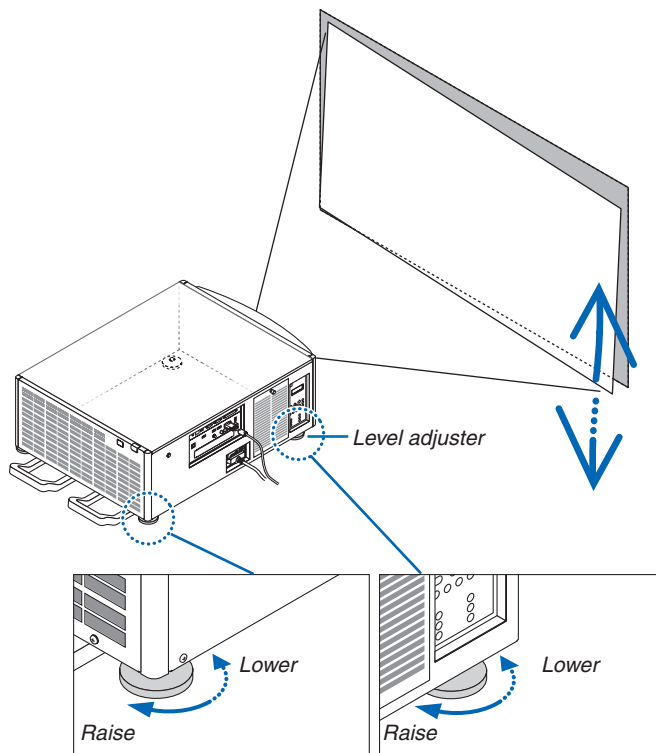
CAUTION

- Perform the adjustment from behind or from the side of the projector. Adjusting from the front could expose your eyes to strong light which could injure them.
- Keep hands away from the lens mounting portion while the lens shift is in operation.
Failure to do so could result in hands being pinched by the moving lens.

Adjustment of the projector's settings (Level adjusters)

The projector must be placed square to the screen otherwise keystone distortion may appear on the screen. For setting the projector perpendicular to the screen when viewed from the side, utilizing the level adjusters equipped at each corner of the projector bottom. Maximum Adjustable length of the level adjuster is 10 mm/0.39".

Example for adjustment



NOTE:

- Do not lengthen each of the level adjusters any more than 10 mm/0.39". The force of doing so may cause the level adjuster to come off, resulting in damage to the projector.
- Pay attention to lengthen or shorten two level adjusters at front at the same time. Same for the rear adjusters, otherwise, the weight of the projector is loaded on one level adjuster and it may cause of damage to it.

Adjusting the projected image's vertical and horizontal position (Lens shift)

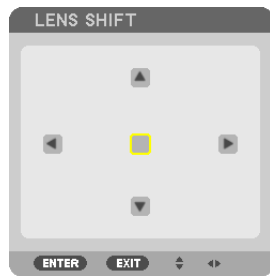
NOTE:

- Shifting the lens to the maximum in two directions combined will cause the edges of the image to become dark or will cause some shadows.

Adjusting with buttons on the cabinet

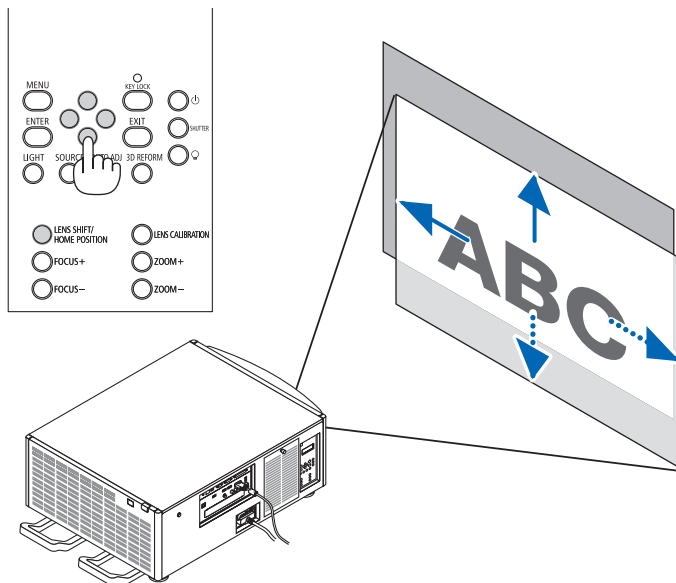
1. Press the LENS SHIFT/HOME POSITION button.

The [LENS SHIFT] screen will be displayed.



2. Press the ▼▲◀ or ▶ button.

Use the ▼▲◀▶ buttons to move the projected image.



- Returning the lens shift position to the home position

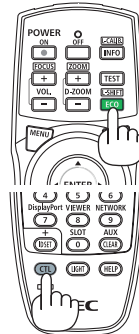
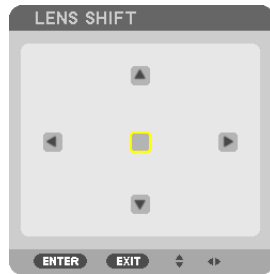
Press and hold the LENS SHIFT/HOME POSITION button for 2 seconds to return the lens shift position to the home position (nearly center position)

3. Projector Adjustment and Connecting

Adjusting with the remote control

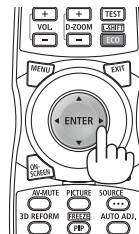
1. Hold the CTL button and press the ECO/L-SHIFT button.

The [LENS SHIFT] screen will be displayed.



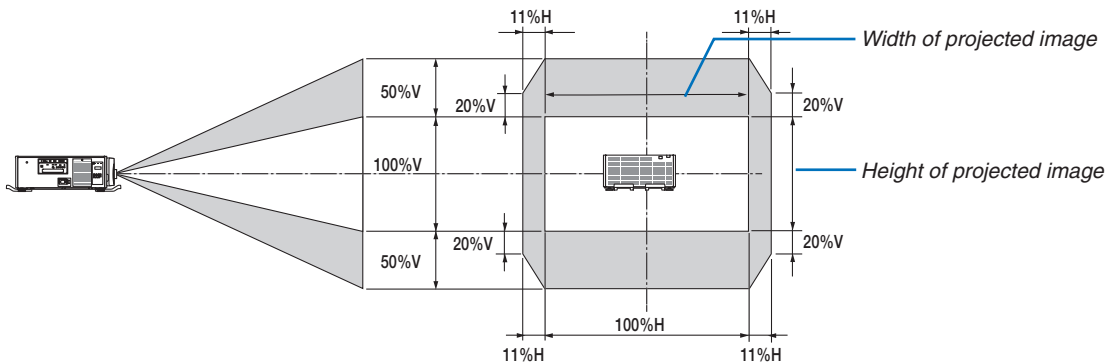
2. Press the ▼▲◀▶ or ► button.

Use the ▼▲◀▶ buttons to move the projected image.



TIP:

- The figure below shows the lens shift ranges (projection mode: desktop/front) of lens units NP-9LS08ZM1, NP-9LS12ZM1, NP-9LS13ZM1, NP-9LS16ZM1, and NP-9LS20ZM1. For NP-9LS40ZM1 check page 7.



Description of symbols: V indicates vertical (height of the projected image), H indicates horizontal (width of the projected image).

Focus

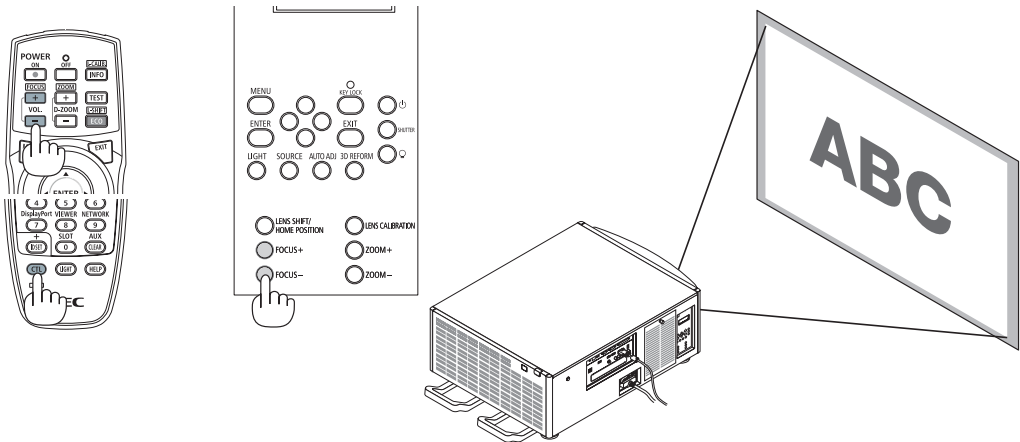
NOTE:

- For lens unit NP-9LS08ZM1, both central and peripheral focus must be adjusted. Use the FOCUS +/- buttons to adjust the central focus.

1. Press the FOCUS +/- button.

- On the remote control, while pressing on the CTL button, press on VOL/FOCUS (+) or (–) button.

The focus is adjusted.



TIP: To obtain the best focus, perform the following (for fixed installation)

Preparation: Warm up the projector for one hour.

- Use the FOCUS +/- buttons to make sure you obtain the best focus. If you do not, move the projector back and forth.
 - Select the [TEST PATTERN] from the menu and display the test pattern. (→ page 47)
 - You can also use the TEST button on the remote control to display the test pattern.
 - Keep pressing the FOCUS – button until the grid of the text pattern is made invisible.
 - Keep pressing the FOCUS + button until you obtain the best focus.
- If you adjust beyond the best focal point, go back to step 3 and repeat the procedures.

NP-9LS08ZM1 Focus adjustment of the lens unit

The NP-9LS08ZM1 unit adjusts the focus around and on the center of the screen.

NOTE:

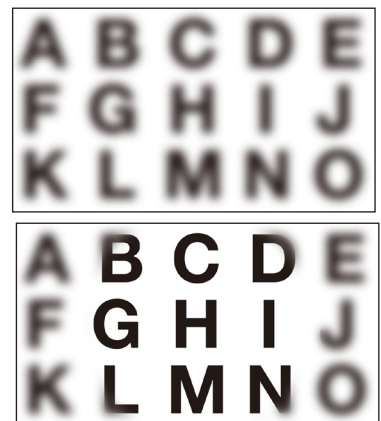
The image plane adjustment mechanism is locked with screws when shipped from the factory.

The image plane adjustment mechanism is not used normally. Use it when the level cannot be satisfied with just the focus adjustment.

Adjustment method

1 Press the FOCUS +/- button to adjust the focus on the center of the screen.

Press the VOL./FOCUS +/- button while pressing down the CTL button when operating with the remote control.



3. Projector Adjustment and Connecting

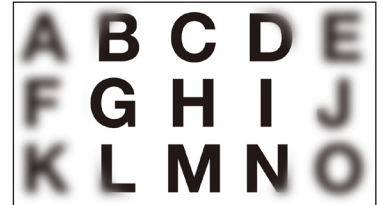
2 Loosen the screws on the image plane adjustment mechanism.

Image plane adjustment mechanism screw

Peripheral focus ring

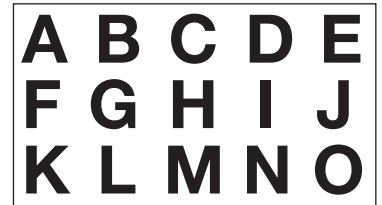


3 Adjust the focus around the screen by manually turning the peripheral focus ring to the left or right.



4 Tighten the screws on the image plane adjustment mechanism to secure the unit.

The focus on the center of the screen does not change very much even after adjusting the peripheral focus so the center focus does not need to be re-adjusted.

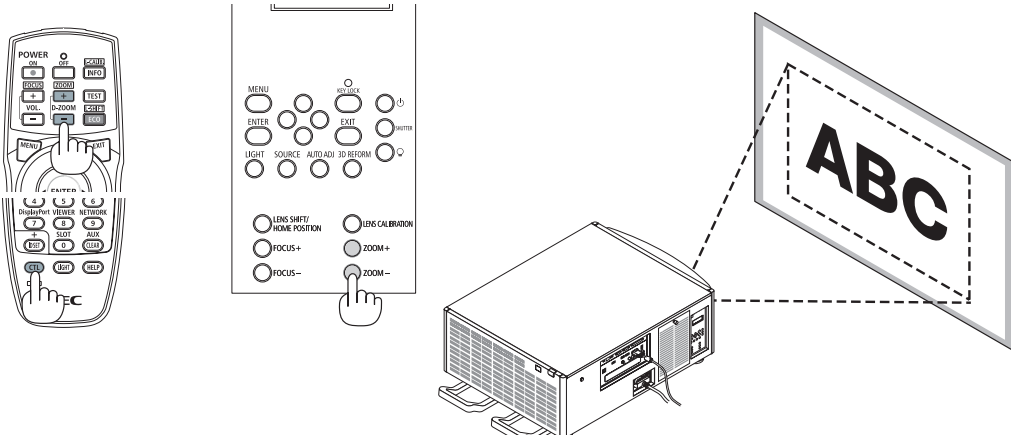


Zoom

1. Press the ZOOM +/- button.

- On the remote control, while pressing on the CTL button, press the D-ZOOM/ZOOM (+) or (-) button.

The zoom is adjusted.



3-5. Connecting to Other Equipments

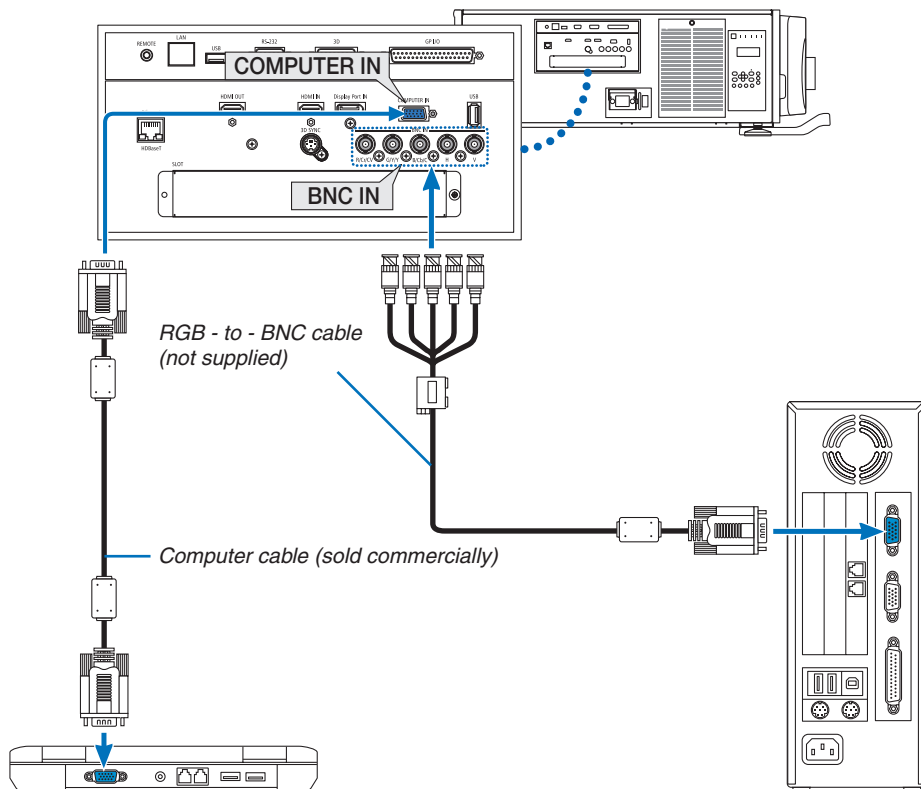
3-5-1. Connecting a computer

A computer cable, BNC cable (5-core type), HDMI cable, or a DisplayPort cable can be used to connect to a computer.

The connection cable is not enclosed with the projector. Please get ready a suitable cable for the connection.

Analog RGB signal connection

- Connect the computer cable to the display output terminal (mini D-sub 15 pin) on the computer and the COMPUTER IN terminal on the projector. Please use a computer cable attached with a ferrite core.
- When connecting the display output terminal (mini D-sub 15 pin) on the computer to the BNC input terminal, use a conversion cable to convert the BNC cable (5 core) to a mini D-sub 15 pin cable.



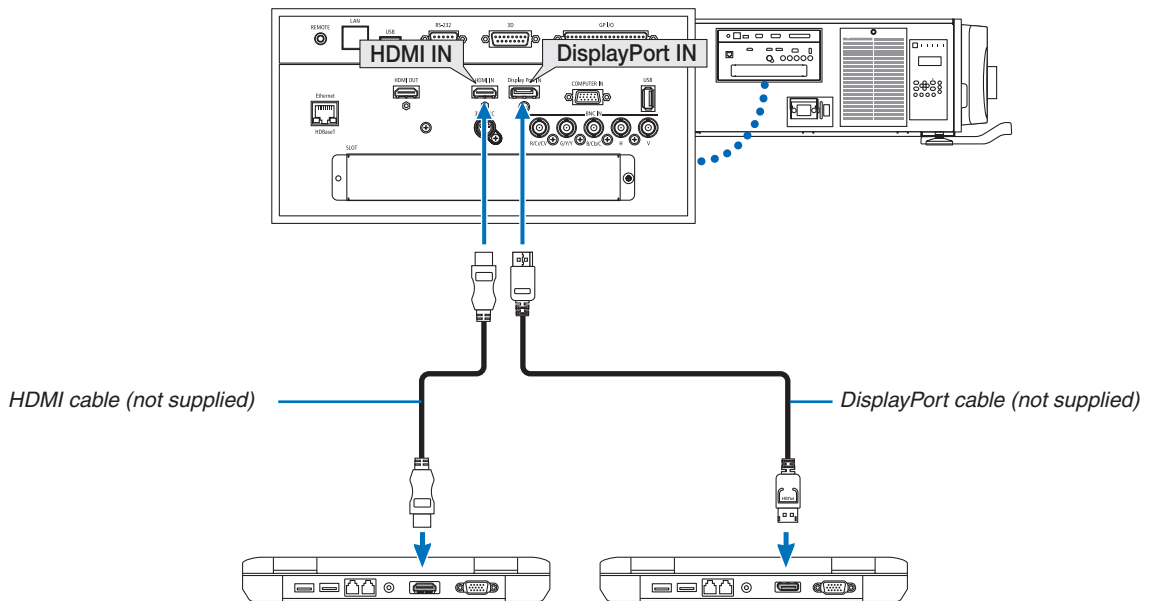
NOTE: Please check the operating manual of the computer as the name, position and direction of the terminal may differ depending on the computer.

- Select the source name for its appropriate input terminal after turning on the projector.

Input terminal	SOURCE button on the projector cabinet	Button on the remote control
COMPUTER IN	COMPUTER	COMPUTER 1
BNC	x5 BNC	COMPUTER 2

Digital RGB signal connection

- Connect a commercially available HDMI cable between the computer's HDMI output terminal and the projector's HDMI IN terminal.
- Connect a commercially available DisplayPort cable between the computer's DisplayPort output terminal and the projector's DisplayPort IN terminal.



- Select the source name for its appropriate input terminal after turning on the projector.

Input terminal	SOURCE button on the projector cabinet	Button on the remote control
HDMI IN	 HDMI	HDMI
DisplayPort IN	 DisplayPort	DisplayPort

Cautions when connecting an HDMI cable

- Use a certified High Speed HDMI® Cable or High Speed HDMI® Cable with Ethernet.

Cautions when connecting a DisplayPort cable

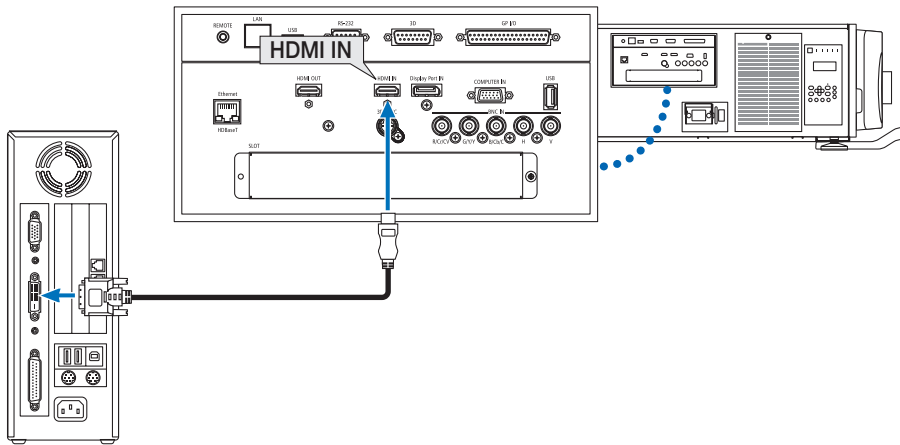
- Use a certified DisplayPort cable.



- Depending on the computer, some time may be required until the image is displayed.
- Some DisplayPort cables (commercially available) have locks.
- To disconnect the cable, press the button on the top of the cable's terminal, then pull the cable out.
- Power can be supplied to the connecting device from the DisplayPort IN terminal (maximum of 1.65 W). However, power will not be supplied to the computer.
- When signals from a device that uses a signal converter adapter are connected to the DisplayPort IN terminal, in some cases the image may not be displayed.
- When the HDMI output of a computer is connected to the DisplayPort IN terminal, use a converter (commercially available).

Cautions when using a DVI signal

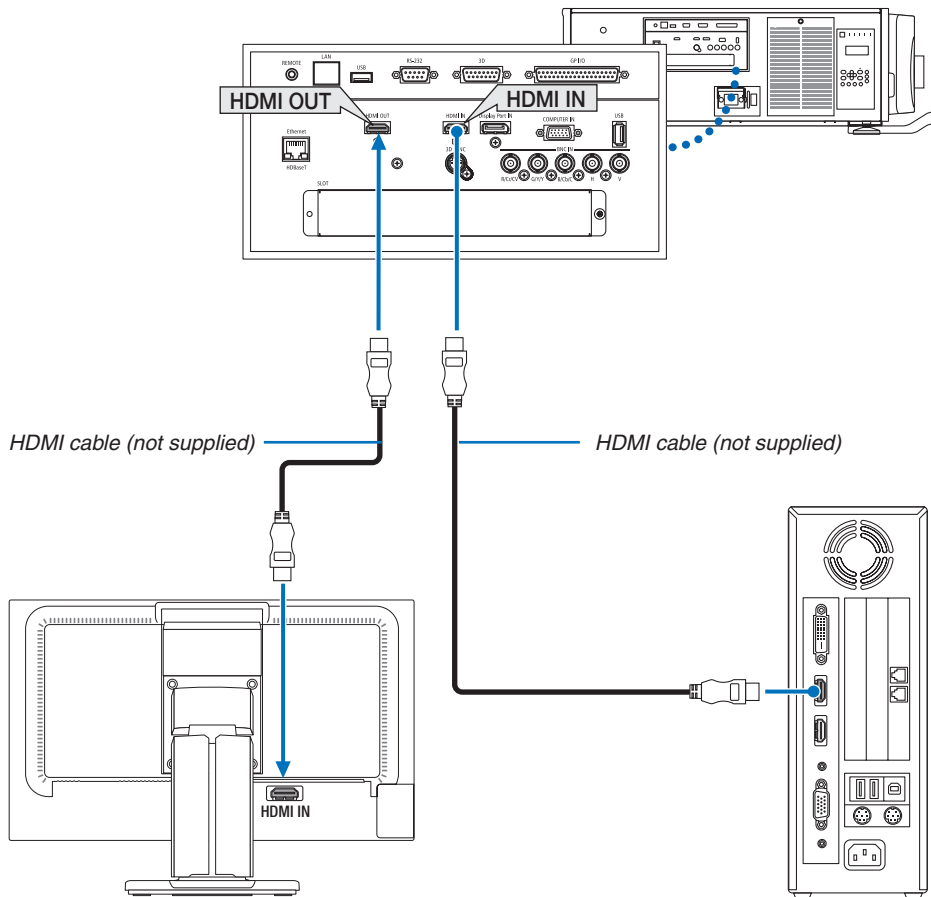
- When the computer has a DVI output terminal, use a commercially available converter cable to connect the computer to the projector's HDMI IN terminal (only digital video signals can be input).



NOTE: When Viewing a DVI Digital Signal

- Turn off the power of the computer and projector before connecting devices.
- When a video deck is connected via a scan converter, etc., the display may not be correct during fast-forwarding and rewinding.
- Use a DVI-to-HDMI cable compliant with DDWG (Digital Display Working Group) DVI (Digital Visual Interface) revision 1.0 standard. The cable should be within 197"/5 m long.
- Turn off the projector and the PC before connecting the DVI-to-HDMI cable.
- To project a DVI digital signal: Connect the cables, turn the projector on, then select the HDMI. Finally, turn on your PC. Failure to do so may not activate the digital output of the graphics card resulting in no picture being displayed. Should this happen, restart your PC.
- Some graphics cards have both analog RGB (15-pin D-Sub) and DVI (or DFP) outputs. Use of the 15-pin D-Sub terminal may result in no picture being displayed from the digital output of the graphics card.
- Do not disconnect the DVI-to-HDMI cable while the projector is running. If the signal cable has been disconnected and then reconnected, an image may not be correctly displayed. Should this happen, restart your PC.
- The COMPUTER IN terminal supports Windows Plug and Play. The BNC input terminals do not support Windows Plug and Play.
- A Mac signal adapter (commercially available) may be required to connect a Mac computer.
To connect a Mac computer equipped with a Mini DisplayPort to the projector, use a commercially available Mini DisplayPort → DisplayPort converter cable.

3-5-2. Connecting an External Monitor



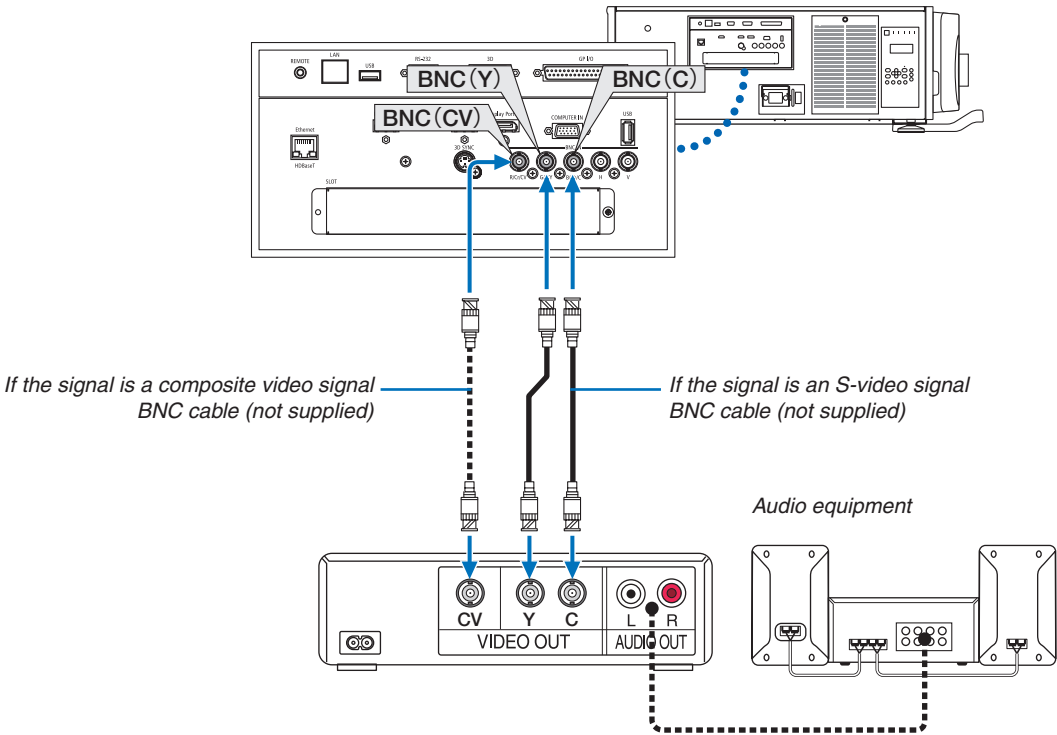
As shown in the figure, when the projector is connected to a computer, the same content from the HDMI input signal is displayed on the monitor for confirmation.

- The HDMI OUT terminal cannot send analog signals (COMPUTER IN terminal, BNC terminal).

NOTE:

- When outputting HDMI signals, turn on the power of the video device on the output side and keep it connected before inputting video signals into this device. The HDMI OUT terminals of the projector are equipped with repeater functions. When a device is connected to the HDMI OUT terminal, the resolution of the output signal is limited by the resolution supported by the connected device.
- In the case of the HDMI OUT terminal of the projector, the theoretical number of units that can be connected in a series is seven. The maximum number of units that can be connected may be reduced by the external environment and quality of the signal and cable, etc. The number of units that can be connected may differ depending on the HDCP version, restriction on the number of HDCP repeaters in the source device and the quality of the cable. The overall system needs to be checked in advance when building a system.
- When the [STANDBY MODE] is set to [NORMAL], video will not be output if the projector goes into the standby mode. Set the mode to [HDBaseT STANDBY], turn on the power of the transmission device and keep it in a connected state.
- When the [STANDBY MODE] of this device is set to [NORMAL], HDMI signals will not be output. To output HDMI signals, set the [STANDBY MODE] to [HDBaseT STANDBY], turn on the power supply of the transmission device and keep it connected.
- HDMI repeater function will not be functioned if switching terminals and putting in/pulling out the HDMI cable is performed on the 2nd projector and after.

3-5-3. Connecting Your Blu-ray Player or Other AV Equipment
Composite video signal/S-video signal connection

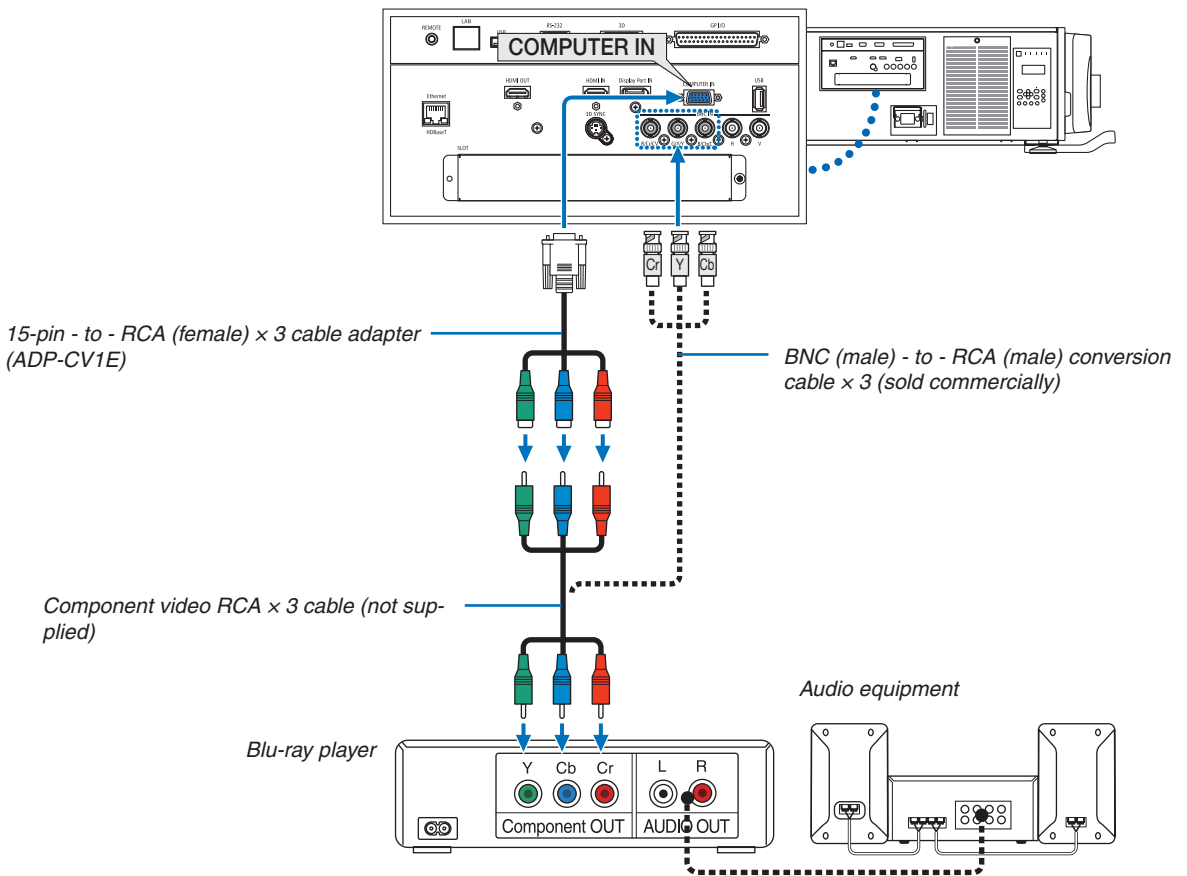


- Select the source name for its appropriate input terminal after turning on the projector.

Input terminal	SOURCE button on the projector cabinet	Button on the remote control
BNC(CV)	BNC(CV)	VIDEO
BNC(Y/C)	BNC(Y/C)	S-VIDEO

Component signal connection

Connect the Blu-ray player's audio to the audio device.



- Select the source name for its appropriate input terminal after turning on the projector.

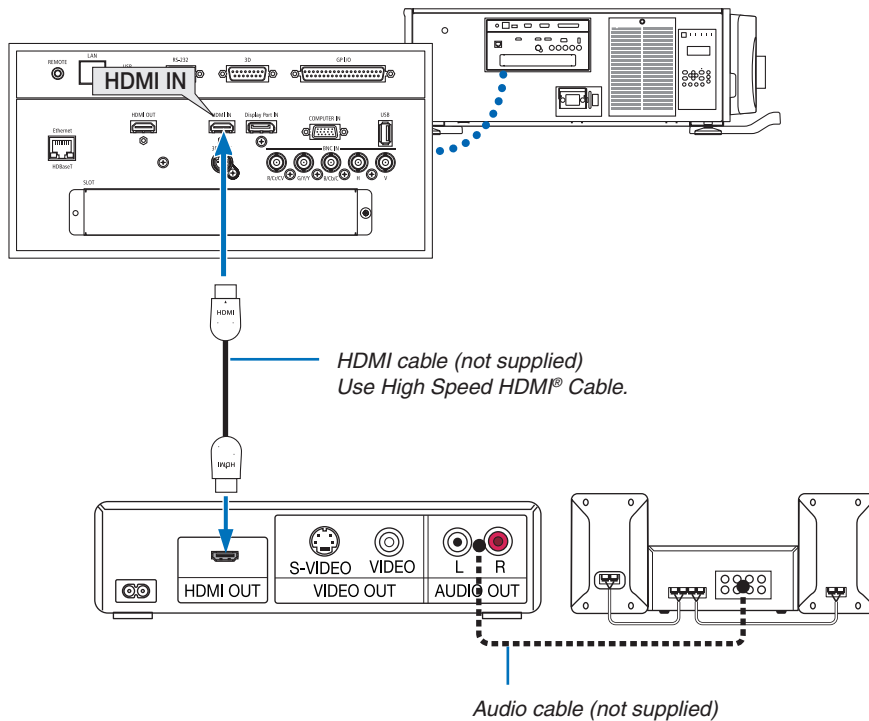
Input terminal	SOURCE button on the projector cabinet	Button on the remote control
COMPUTER IN	COMPUTER	COMPUTER 1
BNC	×5 BNC	COMPUTER 2

NOTE:

- When the signal format is set to [AUTO] (default factory setting when shipped), the computer signal and component signal are automatically distinguished and switched. If the signals cannot be distinguished, select [COMPONENT] under [ADJUST] → [VIDEO] → [SIGNAL TYPE] in the on-screen menu of the projector.
- To connect to a video device with a D terminal, use the sold separately D terminal converter adapter (model ADP-DT1E).

HDMI signal connection

You can connect the HDMI output of your Blu-ray player, hard disk player, or notebook type PC to the HDMI IN terminal of your projector.



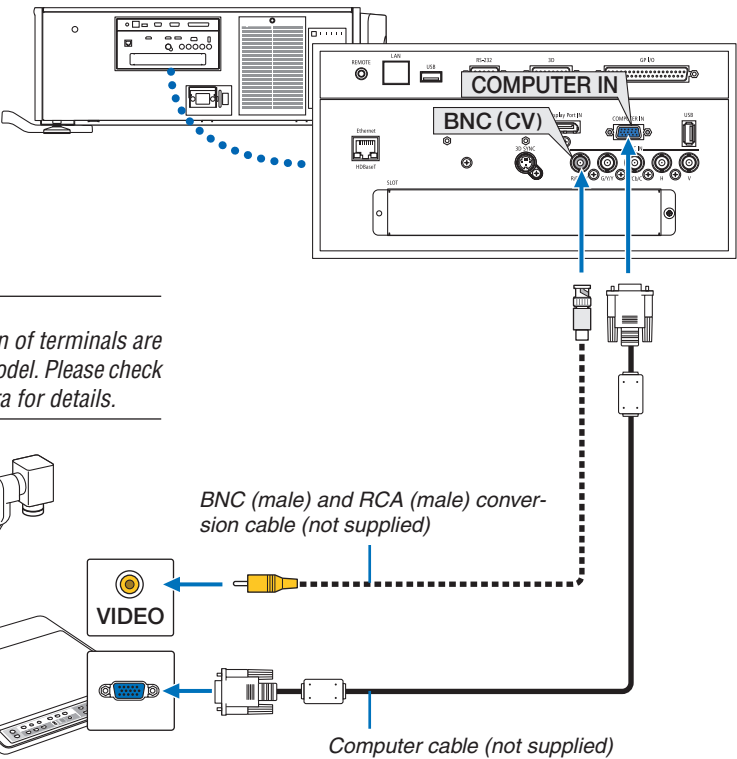
Input terminal	SOURCE button on the projector cabinet	Button on the remote control
HDMI IN	HDMI	HDMI

TIP: For users of audio video equipment with an HDMI terminal:
 Select "Enhanced" rather than "Normal" if HDMI output is switchable between "Enhanced" and "Normal".
 This will provide improved image contrast and more detailed dark areas.
 For more information on settings, refer to the instruction manual of the audio video equipment to be connected.

- When connecting the HDMI IN terminal of the projector to the Blu-ray player, the projector's video level can be made settings in accordance with the Blu-ray player's video level. In the menu select [ADJUST] → [VIDEO] → [VIDEO LEVEL] and make necessary settings.

3-5-4. Connecting a document camera

You can connect a document camera and project printed documents, etc.



NOTE:

- Name, position, and direction of terminals are vary depending on camera model. Please check user's manual of your camera for details.

- Select the source name for its appropriate input terminal after turning on the projector.

Input terminal	SOURCE button on the projector cabinet	Button on the remote control
COMPUTER IN	COMPUTER	COMPUTER 1
BNC(CV)	BNC(CV)	VIDEO

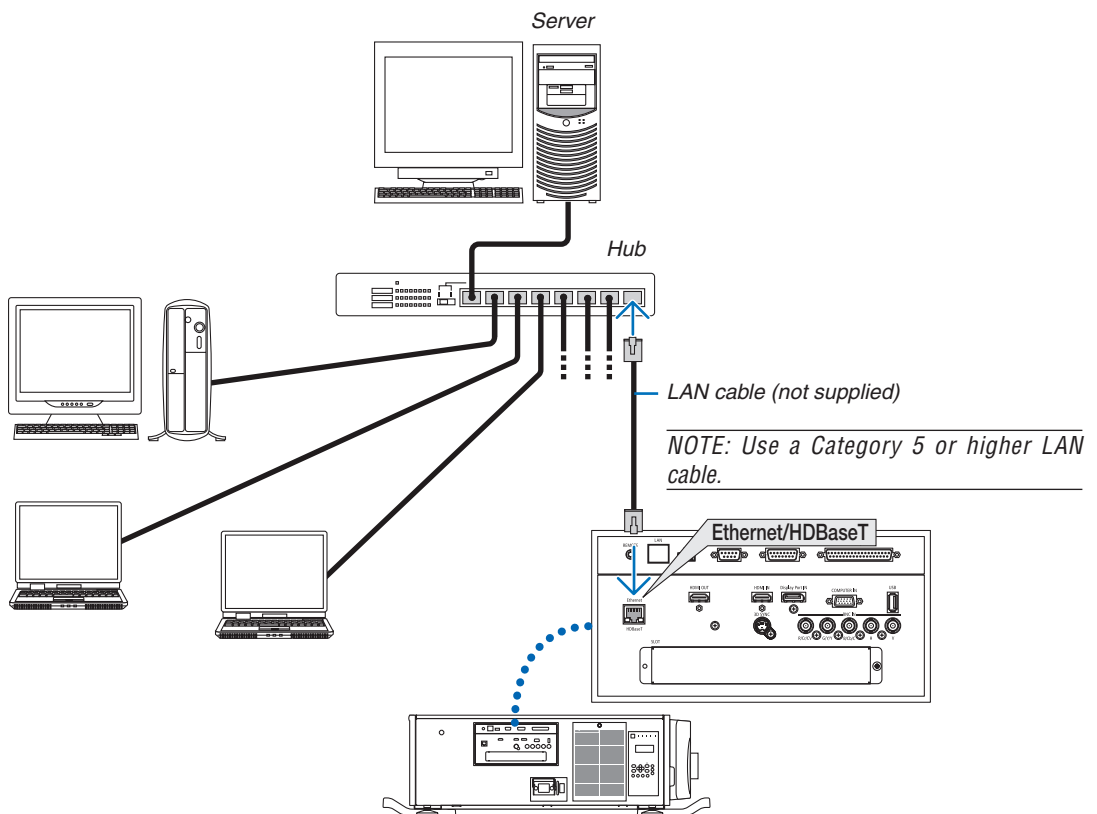
3-5-5. Connecting to a Wired LAN

The projector comes standard with a Ethernet/HDBaseT port (RJ-45) which provides a LAN connection using a LAN cable.

To use a LAN connection, you are required to set the LAN on the projector menu. Select [SETUP] → [NETWORK SETTINGS] → [WIRED LAN]. (→ User's manual: page 115).

Example of LAN connection

Example of wired LAN connection



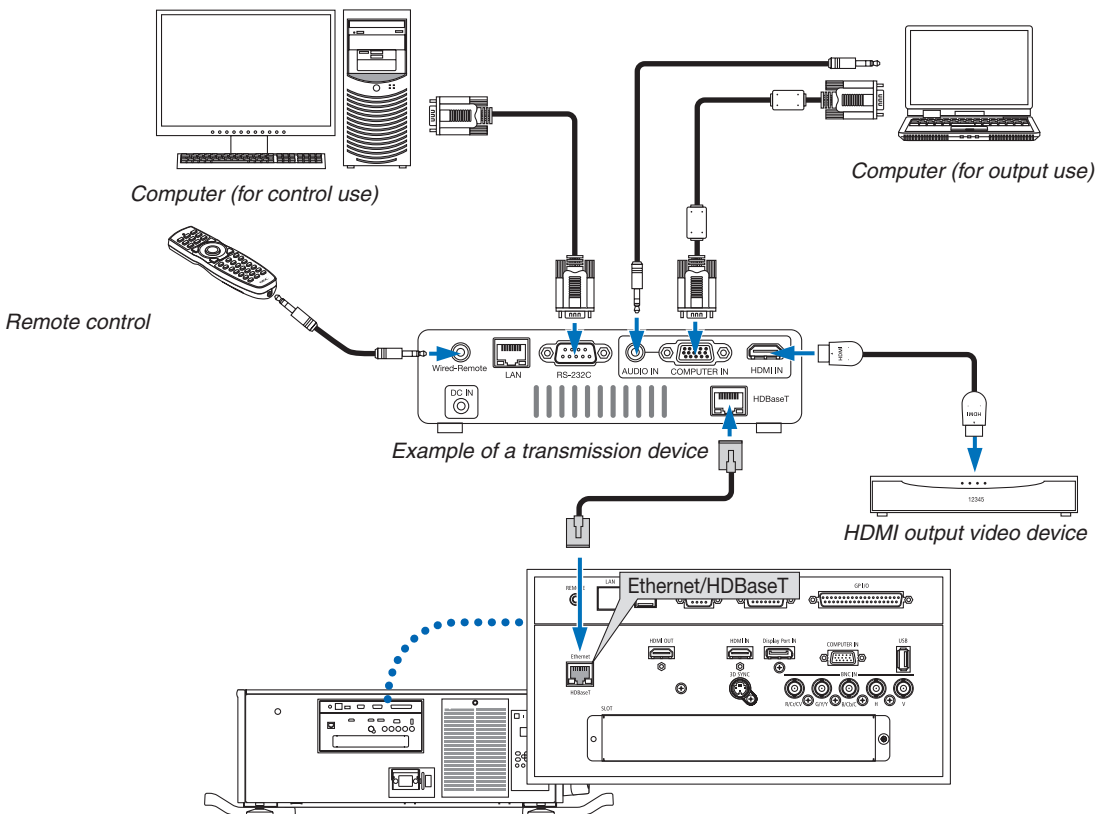
3-5-6. Connecting to a HDBaseT transmission device (sold commercially)

HDBaseT is a connection standard for home appliances that is established by the HDBaseT Alliance.

Use a LAN cable sold commercially to connect the Ethernet / HDBaseT port of the projector (RJ-45) to a HDBaseT transmission device sold commercially.

The Ethernet/HDBaseT port of the projector supports HDMI signals (HDCP) from transmission devices, control signals from external devices (serial, LAN) and remote control signals (IR commands).

Connection example



NOTE:

- Never use the LAN port (RJ-45) on the projector terminal panel for connecting a HDBaseT transmission device. It may cause of malfunction.
- Please use a shielded twisted pair (STP) cable of Category 5e or higher for the LAN cable (sold commercially).
- The maximum transmission distance over the LAN cable is 100 m. (the maximum distance is 70 m for a 4K signal)
- Please do not use other transmission equipment between the projector and transmission equipment. The picture quality may be deteriorated as a result.
- This projector is not guaranteed to work with all HDBaseT transmission devices sold commercially.

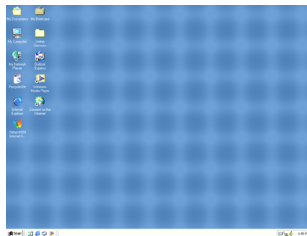
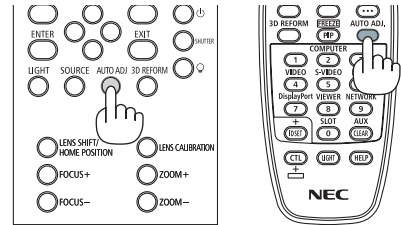
3-6. Optimizing Computer Signal Automatically

Adjusting the Image Using Auto Adjust

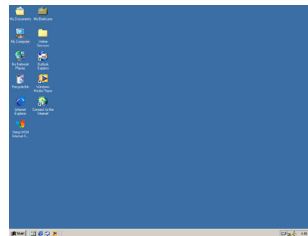
When an image from HDMI IN, DisplayPort IN, BNC input terminal (analog RGB), COMPUTER IN, or HDBaseT is being projected, and the edge is cut off or the image quality is poor, this button can be used to automatically optimize the projection image on the screen.

Press the AUTO ADJ. button to optimize a computer image automatically.

This adjustment may be necessary when you connect your computer for the first time.



[Poor picture]



[Normal picture]

NOTE:

Some signals may take time to display or may not be displayed correctly.

4. List of Menu Items

This chapter explains the list of on-screen menu items for the projector. Please refer to the user's manual about functions and operation on each menu.

Some menu items are not available depending on the input source.

• Basic menu items are indicated by shaded area.

Menu Item			Default	Options
INPUT	HDMI		*	
	DisplayPort		*	
	BNC		*	
	BNC(CV)		*	
	BNC(Y/C)		*	
	COMPUTER		*	
	HDBaseT			
	SLOT			
	ENTRY LIST			
	TEST PATTERN			
ADJUST	PICTURE	MODE	STANDARD	STANDARD, PROFESSIONAL
		PRESET	*	HIGH-BRIGHT, PRESENTATION, VIDEO, MOVIE, GRAPHIC, sRGB, DICOM SIM.
		DETAIL SETTINGS	GENERAL	
			*	HIGH-BRIGHT, PRESENTATION, VIDEO, MOVIE, GRAPHIC, sRGB, DICOM SIM.
				SELECT DYNAMIC, NATURAL, BLACK DETAIL
			GAMMA CORRECTION*1	
			NATURAL SETTING	
			SCREEN SIZE*2	
			LARGE, MEDIUM, SMALL	
			COLOR TEMPERATURE*3	
			DYNAMIC CONTRAST	
			OFF, MOTION IMAGE, STILL IMAGE	
			WHITE BALANCE	
			CONTRAST R	
			0	
			CONTRAST G	
			0	
			CONTRAST B	
			0	
			BRIGHTNESS R	
			0	
			BRIGHTNESS G	
			0	
			BRIGHTNESS B	
			0	
			COLOR CORRECTION	
			RED	
			0	
			GREEN	
			0	
			BLUE	
			0	
			YELLOW	
			0	
			MAGENTA	
			0	
			CYAN	
			0	
		CONTRAST		50
		BRIGHTNESS		50
		SHARPNESS		10
		COLOR		50
		HUE		0
		RESET		
	IMAGE OPTIONS	CLOCK		*
		PHASE		*
		HORIZONTAL		*
		VERTICAL		*
		BLANKING		*
		OVERSCAN		AUTO AUTO, 0[%], 5[%], 10[%]
		ASPECT RATIO		(COMPUTER) AUTO, 4:3, 5:4, 16:9, 15:9, 16:10, NATIVE
				(COMPONENT/VIDEO/S-VIDEO) AUTO, 4:3, LETTERBOX, WIDE SCREEN, ZOOM
				(COMPONENT/VIDEO/S-VIDEO) AUTO, 4:3 WINDOW, LETTERBOX, WIDE SCREEN, FULL
		INPUT RESOLUTION		* -
	VIDEO	NOISE REDUCTION	RANDOM NR	OFF OFF, LOW, MEDIUM, HIGH
			MOSQUITO NR	OFF OFF, LOW, MEDIUM, HIGH
			BLOCK NR	OFF OFF, LOW
		DEINTERLACE		NORMAL NORMAL, MOVIE, STILL
		CONTRAST ENHANCEMENT	MODE	AUTO OFF, AUTO, NORMAL
			GAIN	
		SIGNAL TYPE		AUTO AUTO, RGB, COMPONENT
		VIDEO LEVEL		AUTO AUTO, NORMAL, ENHANCED, SUPER WHITE

* The asterisk (*) indicates that the default setting varies depending on the signal.

*1 The [GAMMA CORRECTION] item is available when an item other than [DICOM SIM.] is selected for [REFERENCE].

*2 The [SCREEN SIZE] item is available when [DICOM SIM.] is selected for [REFERENCE].

*3 When [PRESENTATION] or [HIGH-BRIGHT] is selected in [REFERENCE], the [COLOR TEMPERATURE] is not available.

4. List of Menu Items

Menu Item			Default	Options
ADJUST	3D SETTINGS	STEREO VIEWER		SINGLE, DUAL LEFT, DUAL RIGHT
		FORMAT	AUTO	AUTO, OFF(2D), FRAME PACKING, SIDE BY SIDE(HALF), SIDE BY SIDE(FULL), TOP AND BOTTOM, FRAME ALTERNATIVE, LINE ALTERNATIVE
		L/R INVERT	OFF	OFF, ON
	LENS MEMORY	STORE		
		MOVE		
DISPLAY	PIP/PICTURE BY PICTURE	RESET		
		SUB INPUT	OFF	OFF, HDMI, DisplayPort, BNC, BNC(CV), BNC(Y/C), COMPUTER, HDBaseT, SLOT
		MODE	PIP	PIP, PICTURE BY PICTURE
		PICTURE SWAP	OFF	OFF, ON
		PIP SETTING	TOP-LEFT	TOP-LEFT, TOP-RIGHT, BOTTOM-LEFT, BOTTOM-RIGHT
		SIZE	MEDIUM	LARGE, MEDIUM, SMALL
	GEOMETRIC CORRECTION	BORDER		
		KEYSTONE		
		CORNERSTONE		TOP-LEFT, TOP-CENTER, TOP-RIGHT, CENTER-LEFT, CENTER-RIGHT, BOTTOM-LEFT, BOTTOM-CENTER, BOTTOM-RIGHT
		HORIZONTAL CORNER		TOP-LEFT, TOP-CENTER, TOP-RIGHT, CENTER-LEFT, CENTER-RIGHT, BOTTOM-LEFT, BOTTOM-CENTER, BOTTOM-RIGHT
		VERTICAL CORNER		TOP-LEFT, TOP-CENTER, TOP-RIGHT, CENTER-LEFT, CENTER-RIGHT, BOTTOM-LEFT, BOTTOM-CENTER, BOTTOM-RIGHT
		PINCUSHION		TOP, BOTTOM, LEFT, RIGHT
		PC TOOL	OFF	OFF, 1, 2, 3
		RESET		
	EDGE BLENDING	MODE	OFF	OFF, ON
		TOP	CONTROL	ON
			MARKER	OFF
			RANGE	OFF, ON
			POSITION	
		BOTTOM	CONTROL	ON
			MARKER	OFF
			RANGE	OFF, ON
			POSITION	
		LEFT	CONTROL	ON
			MARKER	OFF
			RANGE	OFF, ON
			POSITION	
		RIGHT	CONTROL	ON
			MARKER	OFF
			RANGE	OFF, ON
			POSITION	
		BLACK LEVEL	TOP-LEFT	
			TOP-CENTER	
			TOP-RIGHT	
			CENTER-LEFT	
			CENTER	
			CENTER-RIGHT	
			BOTTOM-LEFT	
			BOTTOM-CENTER	
			BOTTOM-RIGHT	
	MULTI SCREEN	WHITE BALANCE	MODE	OFF
			CONTRAST W	OFF, ON
			CONTRAST R	
			CONTRAST G	
			CONTRAST B	
			BRIGHTNESS W	
			BRIGHTNESS R	
			BRIGHTNESS G	
			BRIGHTNESS B	
		PICTURE SETTING	MODE	OFF
				OFF, ZOOM, TILING
			ZOOM	
			TILING	1 UNIT, 2 UNITS, 3 UNITS, 4 UNITS
				1 UNIT, 2 UNITS, 3 UNITS, 4 UNITS
				1st UNIT, 2nd UNIT, 3rd UNIT, 4th UNIT
				1st UNIT, 2nd UNIT, 3rd UNIT, 4th UNIT

4. List of Menu Items

Menu Item			Default	Options
SETUP	MENU	LANGUAGE	ENGLISH	ENGLISH, DEUTSCH, FRANÇAIS, ITALIANO, ESPAÑOL, SVENSKA, 日本語 DANSK, PORTUGUÊS, ČEŠTINA, MAGYAR, POLSKI, NEDERLANDS, SUOMI NORSK, TÜRKÇE, РУССКИЙ, عربي, Ελληνικά, 中文, 한국어 ROMÂNĂ, HRVATSKA, БЪЛГАРСКИ, INDONESIA, हिन्दी, ไทย, نویغور 繁體中文
		COLOR SELECT	COLOR	COLOR, MONOCHROME
		INPUT DISPLAY	ON	OFF, ON
		MESSAGE DISPLAY	ON	OFF, ON
		ID DISPLAY	ON	OFF, ON
		3D CAUTION MESSAGE	ON	OFF, ON
		DISPLAY TIME	AUTO 45 SEC	MANUAL, AUTO 5 SEC, AUTO 15 SEC, AUTO 45 SEC
		FILTER MESSAGE	OFF	OFF, 100[H], 500[H], 1000[H], 2000[H], 5000[H], 10000[H], 20000[H]
	INSTALLATION	ORIENTATION	DESKTOP FRONT	DESKTOP FRONT, CEILING REAR, DESKTOP REAR, CEILING FRONT
		SCREEN TYPE	FREE	FREE, 4:3 SCREEN, 16:9 SCREEN, 16:10 SCREEN
		WALL COLOR	OFF	OFF, WHITEBOARD, BLACKBOARD, BLACKBOARD (GRAY), LIGHT YELLOW, LIGHT GREEN, LIGHT BLUE, SKY BLUE, LIGHT ROSE, PINK
		FAN MODE	AUTO	AUTO, HIGH
		LIGHT MODE	LIGHT MODE	NORMAL
			CONSTANT BRIGHTNESS	NORMAL, ECO1, ECO2, LONG LIFE
			ADJUST	OFF, ON 30–100%
		SHUTTER SETTINGS	POWER ON SHUTTER	OPEN, CLOSE
			PICTURE MUTE SHUTTER	OPEN, CLOSE
			FADE IN TIME	0–10 SEC
		REF. WHITE BALANCE	FADE OUT TIME	0–10 SEC
			CONTRAST R	
			CONTRAST G	
			CONTRAST B	
			BRIGHTNESS R	
			BRIGHTNESS G	
			BRIGHTNESS B	
		REF. LENS MEMORY	UNIFORMITY R	
			UNIFORMITY B	
			PROFILE	1, 2
			STORE	
			MOVE	
		LENS CALIBRATION	RESET	
			LOAD BY SIGNAL	OFF, ON
			FORCED MUTE	OFF, ON

4. List of Menu Items

Menu Item				Default	Options
SETUP	CONTROL	TOOLS	ADMINISTRATOR MODE	MENU MODE ADVANCED	ADVANCED, BASIC
				NOT SAVE SETTING VALUES OFF	OFF, ON
				NEW PASSWORD	
				CONFIRM PASSWORD	
			PROGRAM TIMER	ENABLE	OFF
					OFF, ON
				EDIT	ACTIVE
					OFF, ON
					DAY
					SUN, MON, TUE, WED, THU, FRI, SAT, MON-FRI, MON-SAT, EVERY DAY
					TIME
					FUNCTION
					POWER, INPUT, LIGHT MODE
					ADVANCED SETTINGS
					POWER
					OFF, ON
					INPUT
					HDMI, DisplayPort, BNC, BNC(CV), BNC(Y/C), COMPUTER, HDBaseT, SLOT
					LIGHT MODE
					NORMAL, ECO1, ECO2
				REPEAT	OFF, ON
				DELETE	
				UP	
				DOWN	
				BACK	
			TIME ZONE SETTINGS	GMT	-12:00, -11:30, -11:00, -10:30, -10:00, -09:30, -09:00, -08:30, -08:00, -07:30, -07:00, -06:30, -06:00, -05:30, -05:00, -04:30, -04:00, -03:30, -03:00, -02:30, -02:00, -01:30, -01:00, -00:30, 00:00, +00:30, +01:00, +01:30, +02:00, +02:30, +03:00, +03:30, +04:00, +04:30, +05:00, +05:30, +06:00, +06:30, +07:00, +07:30, +08:00, +08:30, +09:00, +09:30, +10:00, +10:30, +11:00, +11:30, +12:00, +12:30, +13:00
			DATE AND TIME SETTINGS	DATE MM/DD/YYYY	
				TIME HH:MM	
				INTERNET TIME SERVER	OFF, ON
				IP ADDRESS	
				UPDATE	
			SUMMER TIME SETTINGS	ENABLE	OFF, ON
				MON(START)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
				DAY(START)	FIRST WEEK, SECOND WEEK, THIRD WEEK, FOURTH WEEK, LAST WEEK
					SUN, MON, TUE, WED, THU, FRI, SAT
				TIME(START)	
				MON(EXIT)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
				DAY(EXIT)	FIRST WEEK, SECOND WEEK, THIRD WEEK, FOURTH WEEK, LAST WEEK
					SUN, MON, TUE, WED, THU, FRI, SAT
				TIME(EXIT)	
				TIME DIFFERENCE	+01:00, +00:30, -00:30, -01:00
			MOUSE		(Note) Cannot be used for this device.
			CONTROL PANEL LOCK	OFF	OFF, ON
			NOTIFICATION SETTINGS	REAR LED	ON
				BUZZER	ON
			SECURITY	OFF	OFF, ON
			COMMUNICATION SPEED	38400bps	4800bps, 9600bps, 19200bps, 38400bps, 115200bps
			CONTROL ID	CONTROL ID NUMBER	1
				CONTROL ID	1-254
				OFF	OFF, ON
			REMOTE SENSOR	FRONT/ BACK	FRONT/BACK, FRONT, BACK, HDBaseT
			LENS TYPE	WITH SENSOR	WITH SENSOR, WITHOUT SENSOR

4. List of Menu Items

Menu Item			Default	Options
SETUP	NETWORK SETTINGS	WIRED LAN	PROFILES	DISABLE, PROFILE 1, PROFILE 2
			DHCP	OFF, ON
			IP ADDRESS	192.168.0.10
			SUBNET MASK	255.255.255.0
			GATEWAY	192.168.0.1
			AUTO DNS	OFF, ON
			DNS CONFIGURATION	
			RECONNECT	
		PROJECTOR NAME	PROJECTOR NAME	PH1202HL Series
		DOMAIN	HOST NAME	necpj
			DOMAIN NAME	
		ALERT MAIL	ALERT MAIL	OFF, ON
			HOST NAME	
			DOMAIN NAME	
			SENDER'S ADDRESS	
			SMTP SERVER NAME	
			RECIPIENT'S ADDRESS 1	
			RECIPIENT'S ADDRESS 2	
			RECIPIENT'S ADDRESS 3	
			TEST MAIL	
		NETWORK SERVICE	HTTP SERVER	NEW PASSWORD CONFIRM PASSWORD
			PJLink	NEW PASSWORD CONFIRM PASSWORD
			AMX BEACON	
				OFF, ON
			CRESTRON	ROOMVIEW CRESTRON CONTROL (ENABLE, CONTROLLER IP ADDRESS, IP ID)
				OFF, ON
	SOURCE OPTIONS	AUTO ADJUST		NORMAL OFF, NORMAL, FINE
		COLOR SYSTEM	BNC(VIDEO)	AUTO AUTO, NTSC3.58, NTSC4.43, PAL, PAL-M, PAL-N, PAL60, SECAM
			BNC(Y/C)	AUTO AUTO, NTSC3.58, NTSC4.43, PAL, PAL-M, PAL-N, PAL60, SECAM
		DEFAULT INPUT SELECT		LAST LAST, AUTO, HDMI, DisplayPort, BNC, BNC(CV), BNC(Y/C), COMPUTER, HDBaseT, SLOT
		SEAMLESS SWITCHING		OFF OFF, ON
		CLOSED CAPTION		OFF OFF, CAPTION1, CAPTION2, CAPTION3, CAPTION4, TEXT1, TEXT2, TEXT3, TEXT4
	POWER OPTIONS	BACKGROUND		BLUE BLUE, BLACK, LOGO
		STANDBY MODE		NORMAL NORMAL, HDBaseT STANDBY
		DIRECT POWER ON		OFF OFF, ON
		AUTO POWER ON SELECT		OFF OFF, HDMI, DisplayPort, COMPUTER, HDBaseT, SLOT
		AUTO POWER OFF		1:00 OFF, 0:05, 0:10, 0:15, 0:20, 0:30, 1:00
		OFF TIMER		OFF OFF, 0:30, 1:00, 2:00, 4:00, 8:00, 12:00, 16:00
		SLOT POWER	PROJECTOR ON	ON OFF, ON
			PROJECTOR STANDBY	ENABLE DISABLE, ENABLE
	RESET	CURRENT SIGNAL		
		ALL DATA		
		ALL DATA (INCLUDING ENTRY LIST)		
		CLEAR FILTER HOURS		

4. List of Menu Items

Menu Item		Default	Options
INFO.	USAGE TIME	LIGHT HOURS USED	
		FILTER HOURS USED	
		TOTAL CARBON SAVINGS	
	SOURCE(1)	INPUT TERMINAL	
		RESOLUTION	
		HORIZONTAL FREQUENCY	
		VERTICAL FREQUENCY	
		SYNG TYPE	
		SYNG POLARITY	
		SCAN TYPE	
		SOURCE NAME	
		ENTRY NO.	
	SOURCE(2)	SIGNAL TYPE	
		VIDEO TYPE	
		BIT DEPTH	
		VIDEO LEVEL	
		LINK RATE	
		LINK LANE	
		3D FORMAT	
	SOURCE(3)	INPUT TERMINAL	
		RESOLUTION	
		HORIZONTAL FREQUENCY	
		VERTICAL FREQUENCY	
		SYNG TYPE	
		SYNG POLARITY	
		SCAN TYPE	
		SOURCE NAME	
		ENTRY NO.	
	SOURCE(4)	SIGNAL TYPE	
		VIDEO TYPE	
		BIT DEPTH	
		VIDEO LEVEL	
		LINK RATE	
		LINK LANE	
		3D FORMAT	
	WIRED LAN	IP ADDRESS	
		SUBNET MASK	
		GATEWAY	
		MAC ADDRESS	
	VERSION(1)	FIRMWARE	
		DATA	
		SUB-CPU	
	VERSION(2)	FIRMWARE3	
		DATE TIME	
		PROJECTOR NAME	
	OTHERS	MODEL NO.	
		SERIAL NUMBER	
		CONTROL ID (when [CONTROL ID] is set)	
		INTAKE TEMPERATURE	
	CONDITIONS	EXHAUST TEMPERATURE	
		ATMOSPHERIC PRESSURE	
		SIGNAL QUALITY	
	HDBaseT	OPERATION MODE	
		LINK STATUS	
		HDMI STATUS	

5. Maintenance

This section describes the simple maintenance procedures you should follow to clean the filters, the lens, and the cabinet.

5-1. Cleaning the Filters

The air-filter sponge keeps dust and dirt from getting inside the projector and should be frequently cleaned. If the filter is dirty or clogged, your projector may overheat.

WARNING

- Please do not use a spray containing flammable gas to remove dust attached to the filters, etc. Doing so may result in fires.

NOTE: The message for filter cleaning will be displayed for one minute after the projector is turned on or off. When the message is displayed, clean the filters. The time to clean the filters is set to [OFF] at time of shipment. (→ page 49)

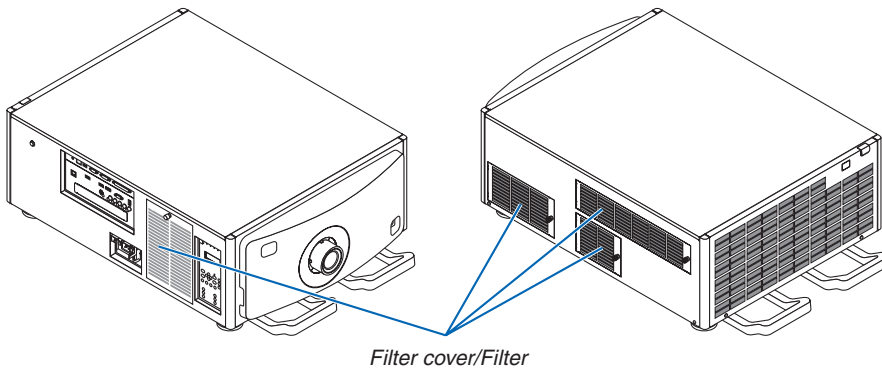
To cancel the message, press any button on the projector cabinet or the remote control.

CAUTION

- Before cleaning the filter, first turn off the power, make sure the cooling fan has completely stopped, then turn off the main power switch. Make sure the unit has cooled down completely before cleaning the filter. Removing the filter cover while the unit is running could result in burns or electric shock from contact with internal parts.

The unit uses a three layer metal-mesh filter installed behind the filter cover. It can be used repeatedly by periodical cleaning.

There are four filters in total, located on the right and left sides. Clean all four at the same time.

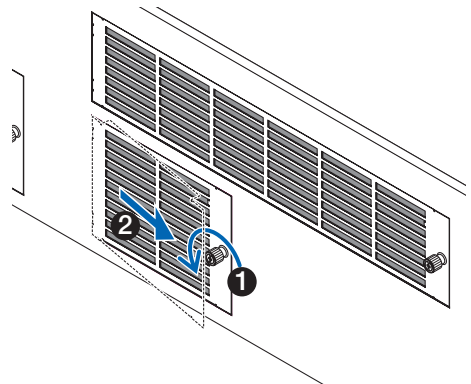


1. Remove the filter cover.

(1) Twist the knob to the left until it turns without resistance.

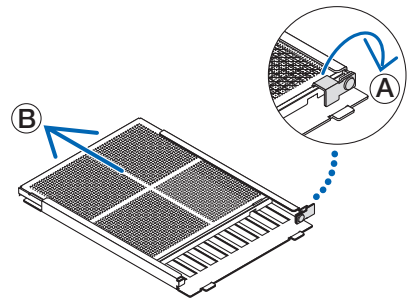
(2) Open the filter cover and remove it.

- The knob does not come off.
- If the knob will not turn, use a Phillips head screw-driver.



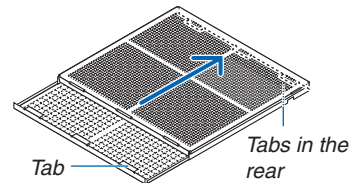
2. Undo the lock lever on the filter cover and remove it.

If the filter gets caught on the filter cover, press the filter cover down slightly and it will come out.



3. Remove the filters.

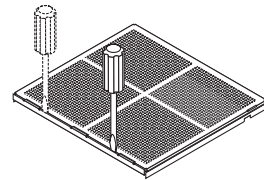
(1) Turn the tabs to the left position and slide the top filter to the right.



- If it is stuck, slowly inserting the tip of a Phillips head screwdriver into the gap in a few places will loosen it.

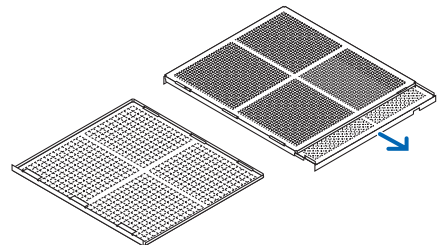
NOTE:

- Do not apply a high degree of force or attempt to pry it open. This could deform the flange making it impossible to reattach the filter cover.



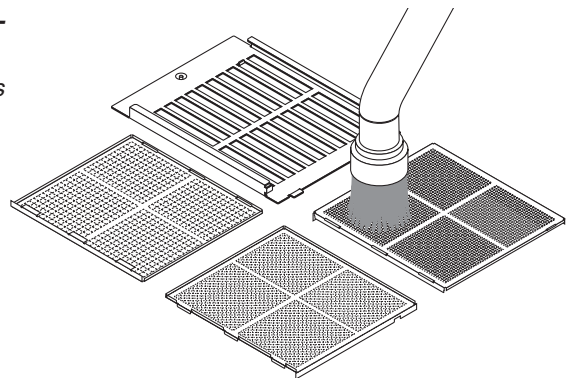
(2) With the tabs still on the left-facing position, remove the filter inside by pulling it toward you.

All three layers of the filter will come out.



4. Clean all the dust from the filters using a vacuum cleaner.

Carefully remove the dust from the filter covers as well as from both sides of all the filters.

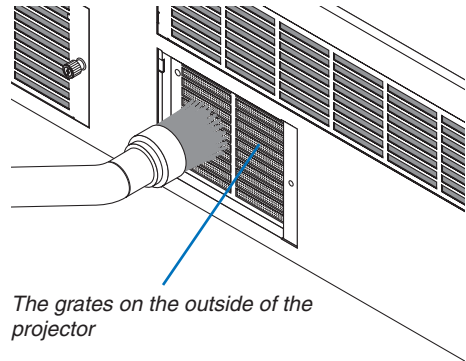


Remove the dust from the grates on the outside of the projector as well.

- Some intake vents do not have grates. Be sure to also remove any dust stuck to the louver (blind with angled horizontal slats) with a vacuum cleaner.

NOTE:

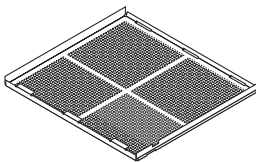
- Whenever you vacuum the filter, use the soft brush attachment to vacuum. This is to avoid damage to the filter.
- Do not wash the filter with water. Doing so can result in damage to the filter membrane and also cause clogging.



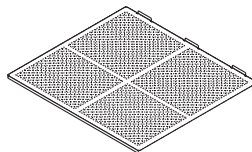
5. Put the various parts of the filter together and fit them inside the filter cover.

The three layers of the filter must be assembled and installed in a particular order and direction.

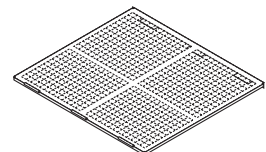
Fine grade filter



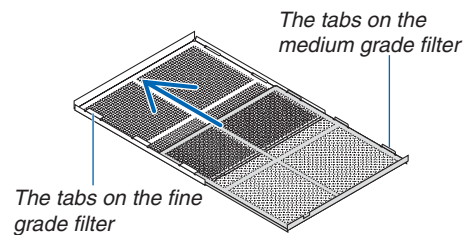
Medium grade filter



Coarse grade filter

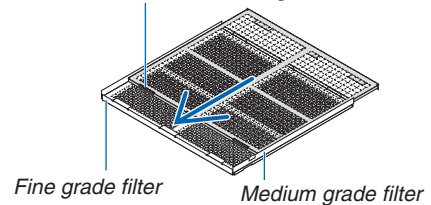


- (1) Turn the tabs on the fine grade filter to the left, turn the tabs on the medium grade filter (with diagonal crossed mesh) to the right, then slide the fine grade filter into the medium grade filter.



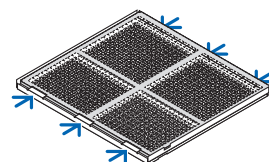
- (2) Turn the tab slots on the coarse grade filter to the left. Next set the fine grade filter and the medium grade filter into the flange, then slide them to the left.

The tab slots on the coarse grade filter

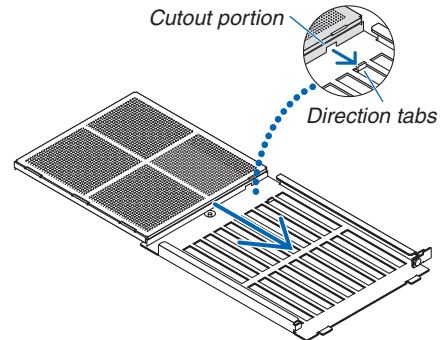


- (3) Make sure that all six tabs are slightly into the tab slots, then slowly push the filter together (some filters have ten tabs).

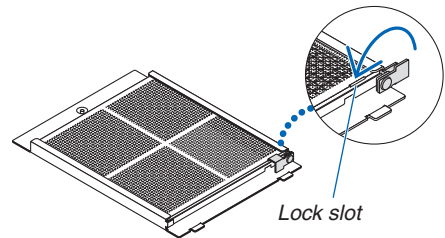
- If the parts of the filter are not completely fitted together they will not fit inside the filter cover.



(4) Turn the fine grade filter so it is facing upward, set the cutout portion of the medium grade filter inside the filter cover along the direction indicated by the tabs, and slowly slide the filter in.



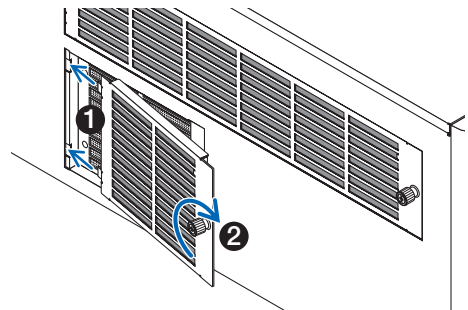
(5) Lock the lever, and insert it into the lock slot on the fine grade filter.



6. Fix the filter inside the projector unit.

- (1) Snap the filter cover tabs into the cutout portion of the projector unit to secure it.
- (2) Turn the knob to the right to fix it in place.

Clean the other intake vent air filters in the same way.



NOTE:

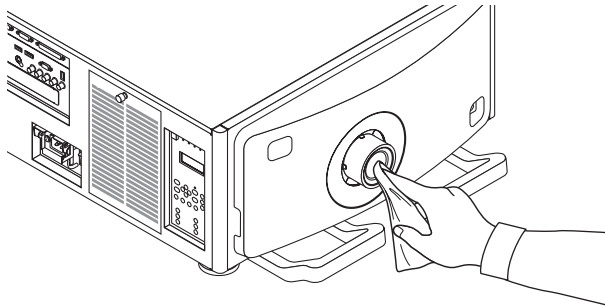
- Before turning on the power make sure that all filter covers are in place. If they are not fitted properly dust could get inside the projector causing it to malfunction.
- Reset [FILTER HOURS USED] after cleaning the filters. To reset go to the on screen menu and select [SETUP] → [RESET] → [CLEAR FILTER HOURS].

5-2. Cleaning the Lens

- Turn off the projector before cleaning.
- Use a blower or lens paper to clean the lens, and be careful not to scratch or mar the lens.

WARNING

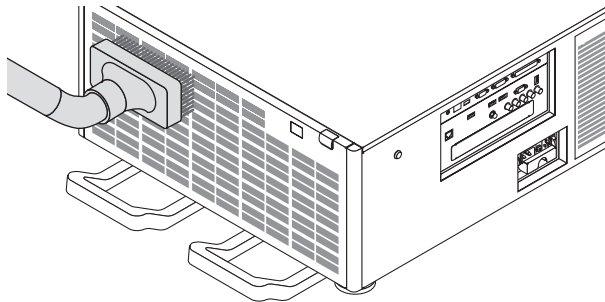
- Do not look into the light source while the projector is ON. Strong light is emitted from the projector and visual impairment could result.
- Please do not use a spray containing flammable gas to remove dust attached to the lens, etc. Doing so may result in fires.



5-3. Cleaning the Cabinet

Turn off the projector, and unplug the projector before cleaning.

- Use a dry soft cloth to wipe dust off the cabinet.
If heavily soiled, use a mild detergent.
- Never use strong detergents or solvents such as alcohol or thinner.
- When cleaning the ventilation slits or the speaker using a vacuum cleaner, do not force the brush of the vacuum cleaner into the slits of the cabinet.



Vacuum the dust off the ventilation slits.

- Poor ventilation caused by dust accumulation in ventilation openings (intake, exhaust) can result in overheating and malfunction. These areas should be cleaned regularly.
- Do not scratch or hit the cabinet with your fingers or any hard objects
- Contact your dealer for cleaning the inside of the projector.

NOTE: Do not apply volatile agent such as insecticide on the cabinet, the lens, or the screen. Do not leave a rubber or vinyl product in prolonged contact with it. Otherwise the surface finish will be deteriorated or the coating may be stripped off.

6. Appendix

6-1. Compatible Input Signal List

Analog Computer Signal

Signal	Resolution (dots)	Aspect Ratio	Refresh Rate (Hz)
VGA	640 × 480	4 : 3	60/72/75/85/iMac
SVGA	800 × 600	4 : 3	56/60/72/75/85/iMac
XGA	1024 × 768	4 : 3	60/70/75/85/iMac
XGA+	1152 × 864	4 : 3	60/70/75/85
WXGA	1280 × 768	15 : 9	60
	1280 × 800	16 : 10	60
	1360 × 768 *2	16 : 9	60
	1366 × 768 *2	16 : 9	60
Quad-VGA	1280 × 960	4 : 3	60/75/85
SXGA	1280 × 1024	5 : 4	60/75/85
SXGA+	1400 × 1050	4 : 3	60/75
WXGA+	1440 × 900	16 : 10	60
WXGA++	1600 × 900	16 : 9	60
UXGA	1600 × 1200	4 : 3	60/65/70/75
WSXGA+	1680 × 1050	16 : 10	60
WUXGA	1920 × 1200	16 : 10	60 (Reduced Blanking)
2K	2048 × 1080	17 : 9	60
Full HD	1920 × 1080 *1	16 : 9	60
MAC 13"	640 × 480	4 : 3	67
MAC 16"	832 × 624	4 : 3	75
MAC 19"	1024 × 768	4 : 3	75
MAC 21"	1152 × 870 *3	4 : 3	75
MAC 23"	1280 × 1024	5 : 4	65

Component

Signal	Resolution (dots)	Aspect Ratio	Refresh Rate (Hz)
HDTV (1080p)	1920 × 1080	16 : 9	50/60
HDTV (1080i)	1920 × 1080	16 : 9	50/60
HDTV (720p)	1280 × 720	16 : 9	50/60
SDTV (480p)	720 × 480	4:3 / 16:9	60
SDTV (576p)	720 × 576	4:3 / 16:9	50
SDTV (480i)	720 × 480	4:3 / 16:9	60
SDTV (576i)	720 × 576	4:3 / 16:9	50

Composite Video/S-Video

Signal	Aspect Ratio	Refresh Rate (Hz)
NTSC	4 : 3	60
PAL	4 : 3	50
PAL60	4 : 3	60
SECAM	4 : 3	50

HDMI

Signal	Resolution (dots)	Aspect Ratio	Refresh Rate (Hz)
VGA	640 × 480	4 : 3	60
SVGA	800 × 600	4 : 3	60
XGA	1024 × 768	4 : 3	60
HD	1280 × 720	16 : 9	60
WXGA	1280 × 768	15 : 9	60
	1280 × 800	16 : 10	60
	1366 × 768 *2	16 : 9	60
Quad-VGA	1280 × 960	4 : 3	60
SXGA	1280 × 1024	5 : 4	60
SXGA+	1400 × 1050	4 : 3	60
WXGA+	1440 × 900	16 : 10	60
WXGA++	1600 × 900	16 : 9	60
WSXGA+	1680 × 1050	16 : 10	60
UXGA	1600 × 1200	4 : 3	60
Full HD	1920 × 1080 *1	16 : 9	60
WUXGA	1920 × 1200	16 : 10	60 (Reduced Blanking)
2K	2048 × 1080	17 : 9	60
WQHD iMac 27"	2560 × 1440	16 : 9	60
WQXGA	2560 × 1600	16 : 10	60 (Reduced Blanking)
4K	3840 × 2160	16 : 9	23.98/24/25/29.97/30
	4096 × 2160	17 : 9	24
HDTV(1080p)	1920 × 1080	16 : 9	50/60
HDTV(1080i)	1920 × 1080	16 : 9	50/60
HDTV (720p)	1280 × 720	16 : 9	50/60
SDTV (480i/p)	720/1440 × 480	4:3 / 16:9	60
SDTV (576i/p)	720/1440 × 576	4:3 / 16:9	50

HDMI 3D

Signal Resolution (dots)	Refresh Rate (Hz)	Aspect Ratio	3D Format
1920 × 1080p	23.98/24	16 : 9	Frame Packing
	50		Top and Bottom
	59.94/60		Side By Side
1920 × 1080i	50		Side By Side
	59.94/60		Side By Side
			Side By Side
1280 × 720p	50		Frame Packing
			Side By Side
			Top and Bottom
	59.94/60		Frame Packing
			Side By Side
			Top and Bottom

DisplayPort

Signal	Resolution (dots)	Aspect Ratio	Refresh Rate (Hz)
VGA	640 × 480	4 : 3	60
SVGA	800 × 600	4 : 3	60
XGA	1024 × 768	4 : 3	60
HD	1280 × 720	16 : 9	60
WXGA	1280 × 768	15 : 9	60
	1280 × 800	16 : 10	60
	1366 × 768 ^{*2}	16 : 9	60
Quad-VGA	1280 × 960	4 : 3	60
SXGA	1280 × 1024	5 : 4	60
SXGA+	1400 × 1050	4 : 3	60
WXGA+	1440 × 900	16 : 10	60
WXGA++	1600 × 900	16 : 9	60
WSXGA+	1680 × 1050	16 : 10	60
UXGA	1600 × 1200	4 : 3	60
Full HD	1920 × 1080 ^{*1}	16 : 9	60
WUXGA	1920 × 1200	16 : 10	60 (Reduced Blanking)
2K	2048 × 1080	17 : 9	60
WQHD iMac 27"	2560 × 1440	16 : 9	60
WQXGA	2560 × 1600	16 : 10	60 (Reduced Blanking)
4K	3840 × 2160	16 : 9	23.98/24/25/29.97/30
	4096 × 2160	17 : 9	24
HDTV(1080p)	1920 × 1080	16 : 9	50/60
HDTV (720p)	1280 × 720	16 : 9	50/60
SDTV (480i/p)	720/1440 × 480	4:3 / 16:9	60
SDTV (576i/p)	720/1440 × 576	4:3 / 16:9	50

DisplayPort 3D

Signal Resolution (dots)	Refresh Rate (Hz)	Aspect Ratio	3D Format
1920 × 1080p	23.98/24	16 : 9	Side By Side
	25		Top and Bottom
			Side By Side
	50		Top and Bottom
Side By Side			
59.94/60	Top and Bottom		
	Side By Side		
	Top and Bottom		
	Side By Side		
1920 × 1080i	50		Top and Bottom
	59.94/60		Side By Side
			Top and Bottom
	1280 × 720p	50	Side By Side
59.94/60		Top and Bottom	
		Side By Side	
		Top and Bottom	

*1 Native resolution

*2 The projector may fail to display these signals correctly when [AUTO] is selected for [ASPECT RATIO] in the on-screen menu. The factory default is [AUTO] for [ASPECT RATIO]. To display these signals, select [16:9] for [ASPECT RATIO].

*3 The projector may fail to display these signals correctly when [AUTO] is selected for [ASPECT RATIO] in the on-screen menu. The factory default is [AUTO] for [ASPECT RATIO]. To display these signals, select [4:3] for [ASPECT RATIO].

- Signals exceeding the projector's resolution are handled with Advanced AccuBlend.
- With Advanced AccuBlend, the size of characters and ruled lines may be uneven and colors may be blurred.
- Upon shipment, the projector is set for signals with standard display resolutions and frequencies, but adjustments may be required depending on the type of computer.

6-2. Troubleshooting

This section helps you resolve problems you may encounter while setting up or using the projector.

Indicator Messages

POWER Indicator

Indicator display		Projector status	Procedure
Off		Power is off.	–
Flashing	Blue (short flashes)	Preparing to turn power on	Wait a while.
	Blue (long flashes)	Off timer (enabled) Program timer (off time enabled)	–
	Orange (short flashes)	Projector cooling	Wait a while.
	Orange (long flashes)	Program timer (on time enabled)	–
Lit	Blue	Power on	–
	Red	Standby mode (NORMAL)	–
	Orange	Standby mode (HDBaseT STANDBY)	–

STATUS Indicator

Indicator display		Projector status	Procedure
Off		No problem, or STANDBY MODE - "HDBaseT STANDBY"	–
Flashing	Red (once per cycle)	Problem with the cover	Check to make sure the lens cover, top cover, side cover, and lens unit are all correctly fixed in place.
	Red (3 times per cycle)	Power failure	Problem with the power system. Contact the NEC projector customer support center to arrange for repair.
	Red (4 times per cycle)	Problem with the fan	Rotation of the cooling fan has stopped. Contact the NEC projector customer support center to arrange for repair.
	Red (6 times per cycle)	Problem with the light source	Problem with the light source system. Contact the NEC projector customer support center to arrange for repair.
	Red (9 times per cycle)	Hardware problem	Problem with the hardware. Contact the NEC projector customer support center to arrange for repair.
Lit	Green	STANDBY MODE in sleep mode*	–
	Orange	Button has been pressed while projector is in key lock mode	The projector's For releasing the key lock setting, press and hold KEY LOCK button on the cabinet over 1 second.
		Projector's ID number and remote control's ID number do not match	Check the control IDs. (→ Pages 52)

* Sleep mode refers to the state whereby the functional restrictions due to the standby mode setting are removed.

LIGHT Indicator

Indicator display		Projector status	Procedure
Off		The light module is turned off.	–
Flashing	Green	Transition to switch ON/OFF the light module	–
Lit	Green	Light module lit	–

TEMP. Indicator

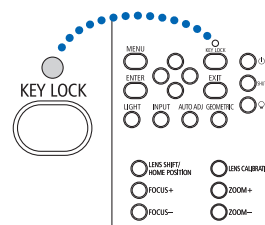
Indicator display		Projector status	Procedure
Off		No problem	
Flashing	Red (cycles of 2)	Temperature problem	The temperature protector has been activated. If the room temperature is high, move the projector to a cool place. If the problem still persists, contact an NEC projector customer support center.
Lit	Orange	High surrounding temperature (Forced ECO Mode)	The surrounding temperature is high. Lower the room temperature.

SHUTTER Indicator

Indicator display		Projector status
Off		Open shutter
Flashing	Green	[LENS CALIBRATION] in progress
Lit	Green	Shutter closed

KEY LOCK Indicator

Indicator display		Projector status
Off		[CONTROL PANEL LOCK] [OFF]
Lit	Orange	[CONTROL PANEL LOCK] [ON]

**If the temperature protector is activated**

If the projector's internal temperature rises abnormally, the light module turns off and the temperature indicator flashes (repeatedly in cycles of 2).

It may happen that the projector's temperature protector is simultaneously activated and the projector's power turns off.

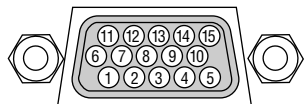
If this happens, do the following:

- Unplug the power cord from the power outlet.
- If using in a place where the surrounding temperature is high, move the projector to a different, cool place.
- If there is dust in the ventilation holes, clean. (→ page 53)
- Wait as such about 1 hour for the projector's internal temperature to lower.

6-3. Pin assignments and signal names of main terminals

COMPUTER IN/ Component Input Terminal (Mini D-Sub 15 Pin)

Connection and signal level of each pin



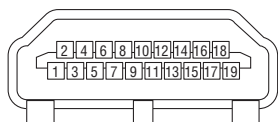
Signal Level

Video signal : 0.7Vp-p (Analog)

Sync signal : TTL level

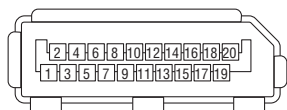
Pin No.	RGB Signal (Analog)	YCbCr Signal
1	Red	Cr
2	Green or Sync on Green	Y
3	Blue	Cb
4	Ground	
5	Ground	
6	Red Ground	Cr Ground
7	Green Ground	Y Ground
8	Blue Ground	Cb Ground
9	No Connection	
10	Sync Signal Ground	
11	No Connection	
12	Bi-directional DATA (SDA)	
13	Horizontal Sync or Composite Sync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

HDMI IN Terminal (Type A)



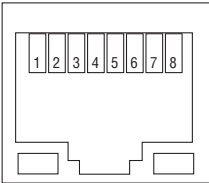
Pin No.	Signal	Pin No.	Signal
1	TMDS Data 2+	11	TMDS Clock Shield
2	TMDS Data 2 Shield	12	TMDS Clock-
3	TMDS Data 2-	13	CEC
4	TMDS Data 1+	14	Disconnection
5	TMDS Data 1 Shield	15	SCL
6	TMDS Data 1-	16	SDA
7	TMDS Data 0+	17	DDC/CEC grounding
8	TMDS Data 0 Shield	18	+5 V power supply
9	TMDS Data 0-	19	Hot plug detection
10	TMDS Clock +		

DisplayPort IN Terminal



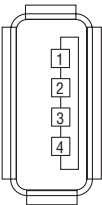
Pin No.	Signal	Pin No.	Signal
1	Main link lane 3-	11	Grounding 0
2	Grounding 3	12	Main link lane 0+
3	Main link lane 3+	13	Configuration 1
4	Main link lane 2-	14	Configuration 2
5	Grounding 2	15	Supplementary channel +
6	Main link lane 2+	16	Grounding 4
7	Main link lane 1-	17	Supplementary channel -
8	Grounding 1	18	Hot plug detection
9	Main link lane 1+	19	Return
10	Main link lane 0-	20	+3.3 V power supply

Ethernet/HDBaseT Port (RJ-45)



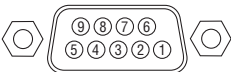
Pin No.	Signal
1	TxD+/HDBT0+
2	TxD-/HDBT0-
3	RxD+/HDBT1+
4	Disconnection/HDBT2+
5	Disconnection/HDBT2-
6	RxD-/HDBT1-
7	Disconnection/HDBT3+
8	Disconnection/HDBT3-

USB Port (Type A)



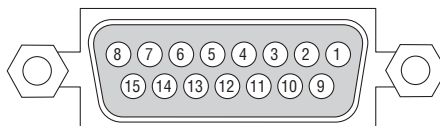
Pin No.	Signal
1	V _{BUS}
2	D-
3	D+
4	Grounding

RS-232C terminal (PC control) (D-Sub 9 Pin)

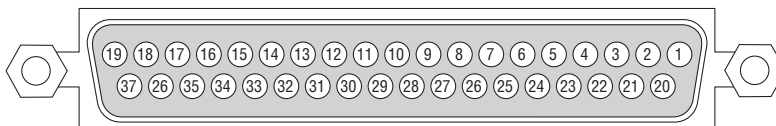


Communications protocol

Pin No.	Signal
1	Unused
2	Transmission data
3	Reception data
4	Connection/Pin 6
5	Grounding
6	Connection/Pin 4
7	Unused
8	Unused
9	Unused

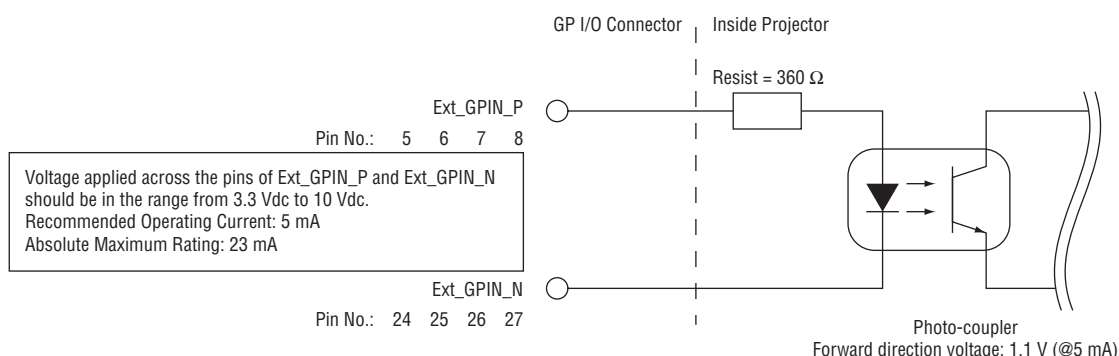
3D connector (D-sub 15 pin)

Pin No.	Signal Name	I/O	Function
1	+12V	PWR	Supplies power (+12V) to the 3D image system
2	GNDC	GND	Ground
3	GNDC	GND	Ground
4	reserved	IN	
5	reserved	OUT	
6	reserved	OUT	
7	CONN_SYNC+	OUT	3D L/R switching timing signal (+) (Connects to the collector of the output transistor of the photo coupler inside the projector)
8	reserved	IN	
9	+12V	PWR	Supplies power (+12V) to the 3D image system
10	reserved	IN	
11	reserved	IN	
12	reserved	IN	
13	reserved	OUT	
14	CONN_SYNC-	OUT	3D L/R switching timing signal (-) (Connects to the emitter of the output transistor of the photo coupler inside the projector)
15	N/C	—	Unused

GP I/O terminal (External control) (D-sub 37 pin)

Pin No.	Signal Name	I/O
1	reserved	IN
2	reserved	IN
3	reserved	
4	reserved	
5	EXT_GPIN1+ (Control)	IN
6	EXT_GPIN2+ (Control)	IN
7	EXT_GPIN3+ (Control)	IN
8	EXT_GPIN4+ (Control)	IN
9	GPOUT1+ (External 3D L/R Output Reference +)	OUT
10	reserved	OUT
11	reserved	OUT
12	reserved	OUT
13	reserved	OUT
14	reserved	OUT
15	reserved	OUT
16	reserved	OUT
17	NC (not connected)	—
18	GND	PWR
19	GND	PWR

Pin No.	Signal Name	I/O
20	reserved	IN
21	reserved	IN
22	reserved	IN
23	reserved	IN
24	EXT_GPIN1- (Control)	IN
25	EXT_GPIN2- (Control)	IN
26	EXT_GPIN3- (Control)	IN
27	EXT_GPIN4- (Control)	IN
28	GPOUT1- (External 3D L/R Output Reference -)	OUT
29	reserved	OUT
30	reserved	OUT
31	reserved	OUT
32	reserved	OUT
33	reserved	OUT
34	reserved	OUT
35	reserved	OUT
36	NC (not connected)	-
37	GND	PWR



Using GPIO Control

Momentary “ON” pulse enables you to control projector. To enable “ON” pulse, hold it for at least 300 ms. Hold “OFF” for at least 300 ms before “ON”. (→ page 68)

Here is function list to control projector by using GPIO port.

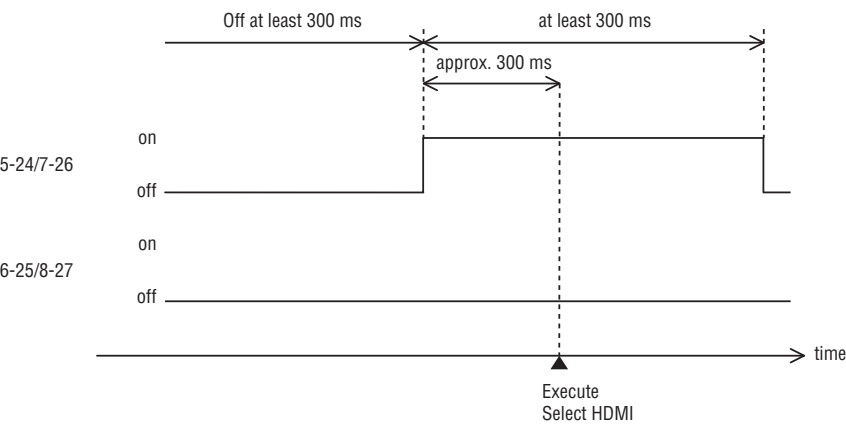
Photo-coupler ON/OFF				Function
8-27	7-26	6-25	5-24	The following functions apply depending on the combination of input terminals.
OFF	OFF	OFF	ON	Power ON
OFF	OFF	ON	OFF	Power OFF
OFF	OFF	ON	ON	Shutter close
OFF	ON	OFF	OFF	Shutter open
OFF	ON	OFF	ON	Select HDMI
OFF	ON	ON	OFF	Select DisplayPort
OFF	ON	ON	ON	Select BNC
ON	OFF	OFF	OFF	Select BNC(CV)
ON	OFF	OFF	ON	Select BNC(Y/C)
ON	OFF	ON	OFF	Select Computer
ON	OFF	ON	ON	Select HDBaseT
ON	ON	OFF	OFF	Select SLOT
ON	ON	OFF	ON	reserved
ON	ON	ON	OFF	reserved
ON	ON	ON	ON	reserved

Example for turning off the power source (Shutter close): Input ON to 6-25 and 5-24 while 8-27 and 7-26 are OFF.

NOTE:

- The operation command coming from GPI/O port will be canceled when the projector is processing other tasks.
- Set all other pins than those in use to “OFF”.
- The operation command is executed upon continuous input of the “ON” pulse for approximately 300 ms.

Timing chart of GPIO control
Example of Select HDMI



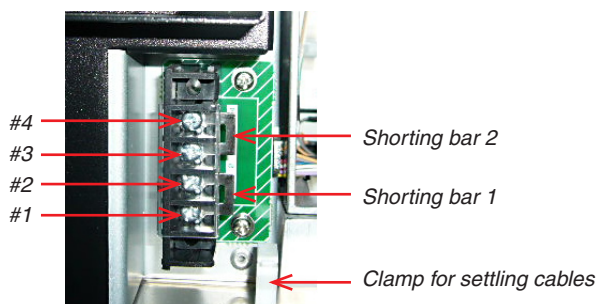
Remote Interlock Terminal

This terminal functions as safety device for the projector. The contacts are normally closed. When an abnormality occurs, the contacts open to immediately stop the projector (interlock state) (shipped with a shorting bar installed). By replacing the shorting bar with wiring and attaching it to the contacts, the projector can be immediately stopped remotely when an abnormality occurs in the projector.

Follow the following procedure to recover from the interlock state.

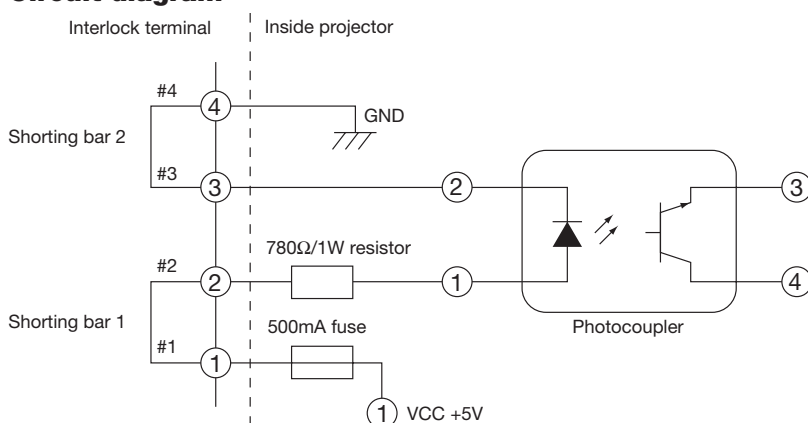
1. **Disconnect the AC power supply to the projector unit.**
2. **Close the contact to the remote interlock terminal.**
3. **Connect the AC power supply to the projector unit.**

Remote interlock terminal (exterior view)



- The remote interlock terminal is equipped on inside of the lens cover. Remove the lens cover for connection.
- Securely reinstall the lens cover.
- The bottom side of the lens cover is notched. Settle the connected cables by the clamp under the terminal and draw them out to out of the projector from the notch.

Circuit diagram



Terminal no.	Photocopier ON/OFF	Description
#1	-	+5V supply
#2	ON/OFF	Connects to the photocopier anode inside the projector
#3		Connects to the photocopier cathode inside the projector
#4	-	Ground

• **When the length of the wiring is less than 5 m (approximate)**

Remove the shorting bar 1 or the shorting bar 2 and connect the terminal (#1/#2 or #3/#4) to the contact.

- An external power supply is not necessary.
- A maximum of 2 sets of contacts can be connected (when both the shorting bar 1 and the shorting bar 2 are removed.)
- The minimum rating for the contact is as below.

Voltage	Minimum rated current
5V or less	2mA or less

• **When the length of the wiring is at least 5 m (approximate)**

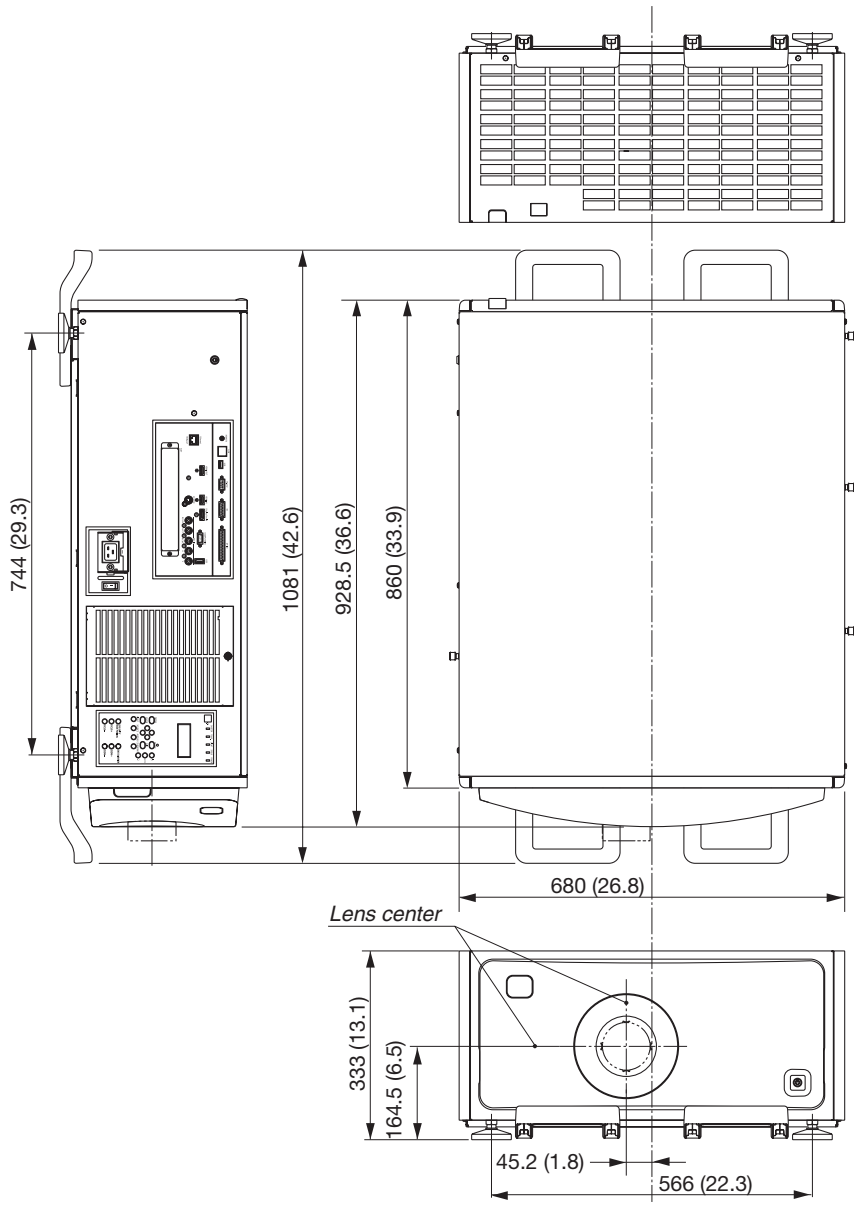
Remove the shorting bar 1 and the shorting bar 2 and connect an external power supply and the contact to the terminals (#2 and #3) in series (do not use #1 and #4.)

- Connect #2 to the positive side of an external power supply, and connect #3 to the negative side of the external power supply.
- The voltage for the connecting external power supply should be within a range of 5V minimum to 16V maximum. The minimum rating for the contact depends on the voltage of the external power supply.

Voltage	Minimum rated current
5V	2mA
16V	18mA

6-4. Cabinet Dimensions

Unit: mm (inch)



In Europe

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D-80637 München, Germany
Telephone: +49 89 99699 0
Email: infomail@nec-displays.com

In North America

NEC Display Solutions of America, Inc.
Address: 500 Park Boulevard, Suite 1100 Itasca,
Illinois
60143, U.S.A.
Telephone: +1 800 836 0655

In Oceania

Australia
AWA Limited.
Address: 151 Arthur Street
Homebush West NSW 2140 Australia
Customer Call Centre
Telephone: 0297647777
Email Address: commercialsupport@awa.com.au

New Zealand
Visual Group Ltd.
Address: 28 Walls Road Penrose Auckland New Zealand
Telephone: 095250740
Email Address: sarah.reed@visualgroup.co.nz

In South America

Brazil
Videocorp Brasil
Address: Avenida Conselheiro Rodrigues Alves Nro. 820
/ Sala 15 - 2º
Andar - Vila Mariana
São Paulo - SP - Brasil
CEP 04014-002
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