PROJECTOR

EX779_DP437-570

SERVICE MANUAL

CONTENTS

Revised History

Date	Description
2010-03-08	Draft Edit - Preliminary
2010-03-22	Version.00
2010-04-14	Version.01, add 3D Function

1. COMPLIANCE OF SAFE REPAIR

Be sure to read this Service Manual before providing services. In the projector, full consideration is taken to ensure safety for fire, electric shock, injury, harmful radiation, and substance. Therefore, observe the notice described in this Service Manual so that safety is kept when providing services. Moreover, be sure to observe the notice described in the Instruction Manual.
Pay attention to the following items during service inspection.

1-1 Cautions during disassembling and assembling

1. This equipment contains parts under high voltage. When making repairs, etc.
   Be sure to pull out the power plug beforehand to insure safety.
2. Parts may be very hot immediately after use.
   Make sure the equipment has cooled off sufficiently before carrying out repairs.
3. Make sure that parts and screws and wiring, etc. are returned to their original positions.
   Tube, tape and other insulation materials have been used for safety reasons.
   The internal wiring has been designed to avoid direct contact with hot parts or parts under high voltage when using clamps or other tools.
4. The parts used in this device have special safety features such as flame-resistance and anti-voltage properties. When replacing parts, always use parts supplied from the factory.
5. After finishing operations make sure that all parts and wires have been returned to their original position and that there has been no deterioration of the area around the location that was worked on.
6. Be sure to use a grounding strap (wrist band) during repair and inspection.

1-2 Lamp

During current conduction, the lamp is in the high-temperature state. In this case, pay careful attention because a high voltage is used. When replacing a lamp, replace it after confirming that the lamp has gotten cold sufficiently.

1-3 Lens

Do not look into a lens during projection. This damages your eyes.

2. SPECIFICATIONS

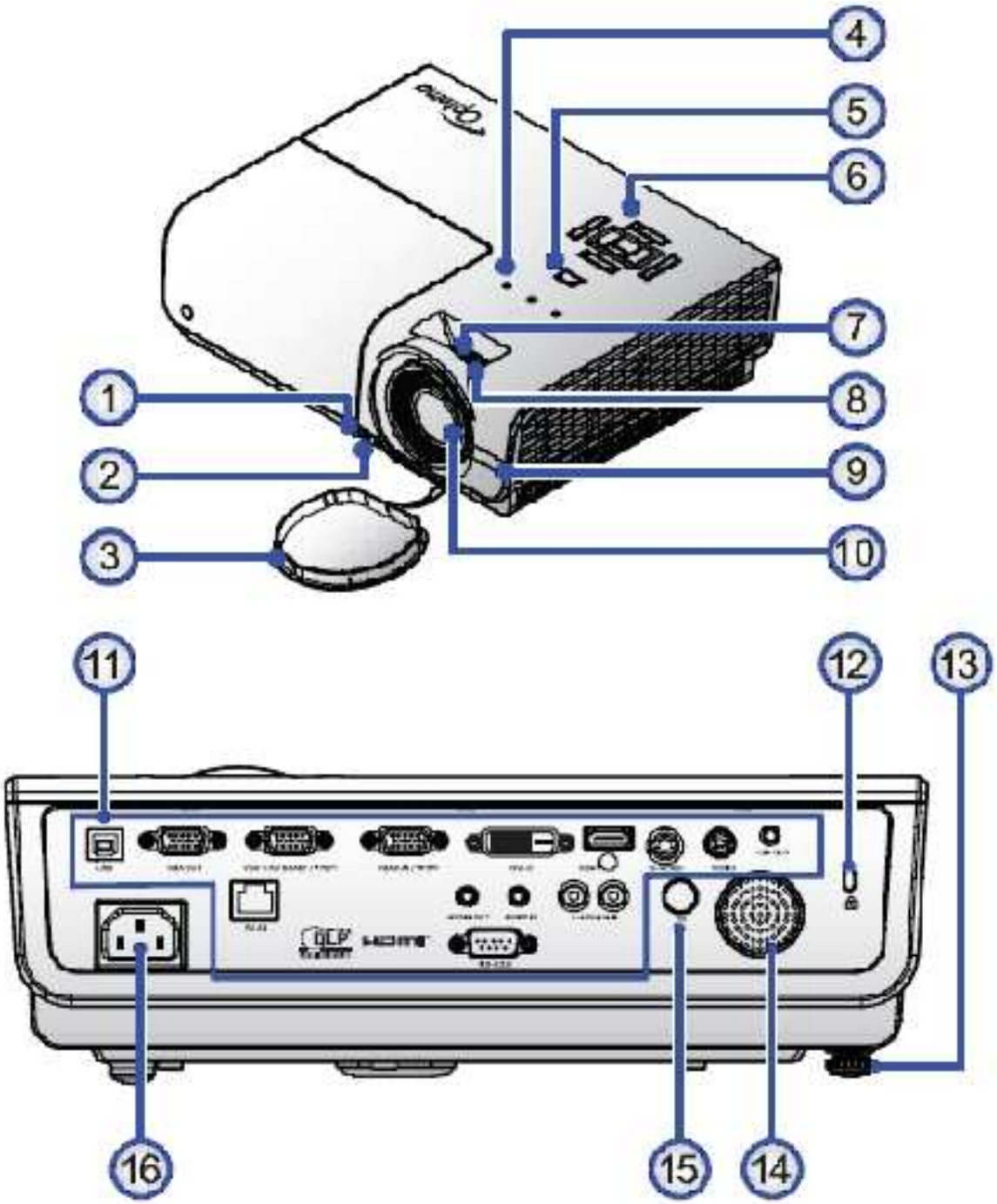
2-1. Summary Specifications

Model	**EX779**
Display type	TI DLP DMD 0.7" XGA type-A x 1 (LVDS, 12deg)
Resolution	XGA 1024x768 Native
Projection distance	1.5 meters ~ 10 meters
Projection screen size	25.7"~300"
Projection lens	Manual Focus/Manual Zoom x 1.15
Zoom ratio	1.8-2.1
Vertical keystone correction	+/- 15 degrees
Projection methods	Front, Rear, Desktop/Ceiling (Rear, Front)
Data compatibility	IBM PC or compatibles (VGA, SVGA, XGA, SXGA, UXGA), Mac
SDTV/EDTV/ HDTV	480i, 576i, 480p, 576p, 720p, 1080i, 1080p
Video compatibility	NTSC, PAL , SECAM
H-Sync	15, 31 – 90 kHz
V-Sync	50 – 85 Hz
Color wheel	5 Seg, RYGWB, 2x
Operation temperature	5°~ 35℃
Dimensions	326.22 mm (W) x 106.2 mm (H) x 255 mm (D)
Weight	<8.1 lbs (typ)
AC Input	AC Universal 100 ~ 240, Typical @ 110VAC (100~240)/+-10%
Power consumption	360W
Stand By	<1watt
Lamp	280W
Brightness	Normal: 3300lm(Min)-4000lm(Max) ; ECO: 2500lm(Min)-3200lm(Max)
Audio speaker	3W mono speaker
Input Terminals	VGA IN-1
	VGA IN-2
	S-Video x 1

	Composite Video x 1
	DVI-D IN
	HDMI IN
	AUDIO IN (L& R)
	AUDIO IN x 1
Output Terminals	VGA x 1 (Loop Thru only for VGA IN-1)
	AUDIO OUT x 1
Control Terminals	RS-232C
	RJ45
	USB (type B)
	12V DC
Security	Kensington lock

2-2. Views of projector parts

A. MAIN UNIT

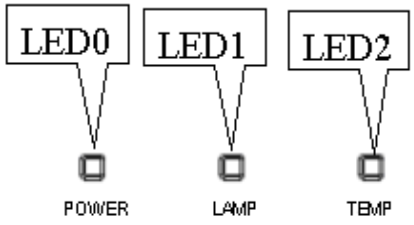


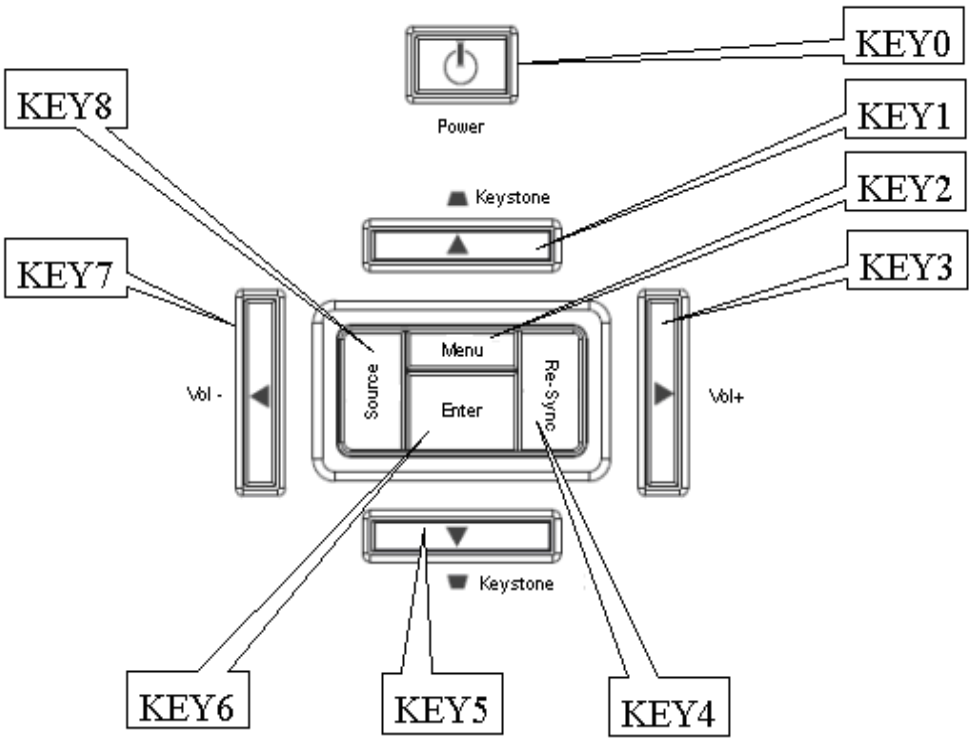
ITEM	LABEL	DESCRIPTION
1.	Tilt-Adjuster Button	Push to release height adjuster
2.	Tilt-Adjuster Feet	Adjusts level of projector
3.	Lens cap	Protect lens when not in use
4.	LED Indicators	Display the LED blink status
5.	Power Button	Turning on the projector.
6.	Function Keys	See Top view—On-screen Display (OSD) buttons.
7.	Zoom ring	Enlarges the projected image
8.	Focus ring	Focuses the projected image
9.	Front IR receiver	Receive IR signal from remote control
10.	Lens	Projection Lens
11.	Connection ports	Connect the signals from a device
12.	Kensington Lock	Secure to permanent object with a Kensington lock system
13.	Tilt-Adjustment Foot	Adjusts level of projector
14.	Built-in Speaker	Outputs audio sounds
15.	Back IR Receive	Receive IR signal from remote control
16.	Power Socket	Connect the power cable

Important:

Ventilation openings on the projector allow for good air circulation, which keeps the projector lamp cool. Do not obstruct any of the ventilation openings.B. Top view---On-screen Display (OSD) buttons and LEDS

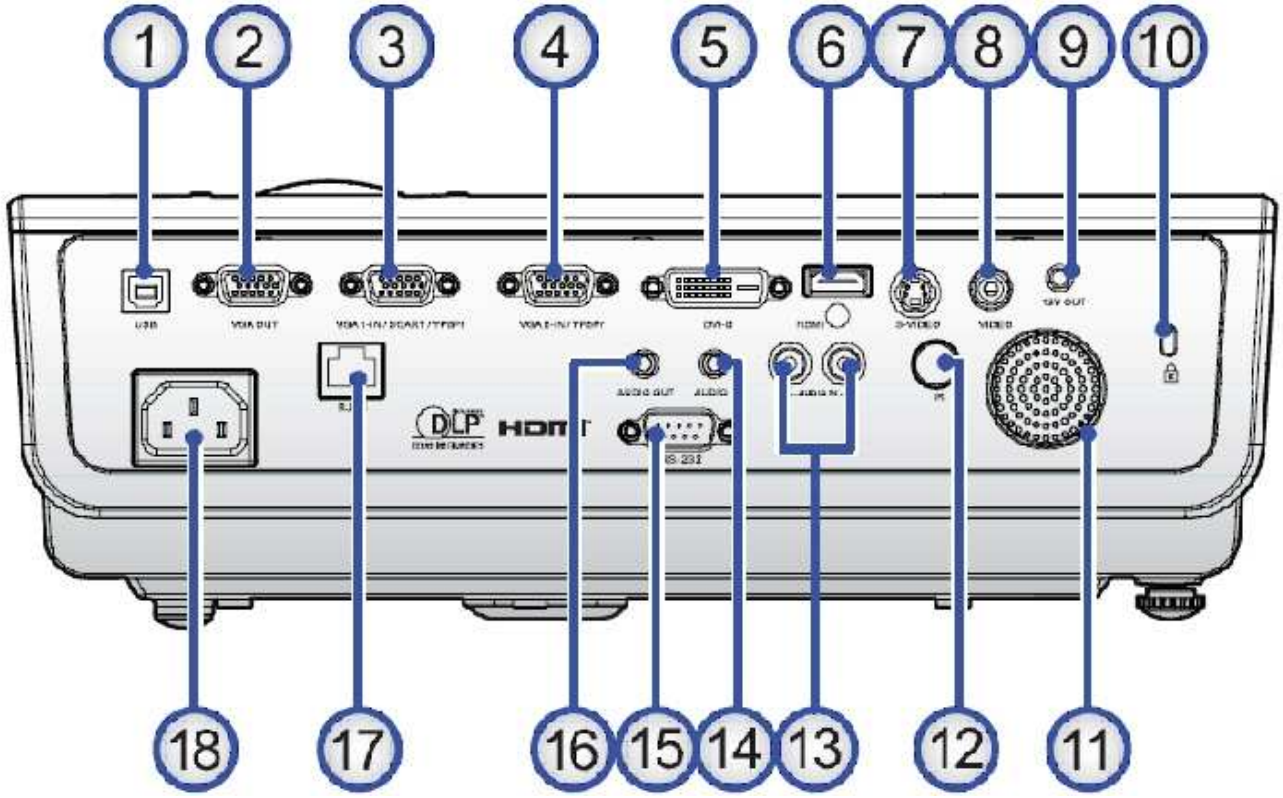
B. Display (OSD) buttons and LEDS





ITEM	LABEL	DESCRIPTION
LED0	POWER LED	Display the power on/off sequence status
LED1	LAMP LED	Display the the lamp status
LED2	TEMP LED	Display the thermal status
KEY0	⏻ (Power button)	Turns the projector On or Off.
KEY1	▲ (Up cursor) / Keystone+	Navigates and changes settings in the OSD Quick Menu – For Keystone
KEY2	MENU	Opens and exits OSD menus
KEY3	► (Right cursor) / Volume	Navigates and changes settings in the OSD Quick Menu – For Volume
KEY4	AUTO	Optimizes image size, position, and resolution
KEY5	▼ (Down cursor) /Keystone-	Navigates and changes settings in the OSD Quick Menu – For Keystone
KEY6	ENTER	Enter or confirm highlighted OSD menu item
KEY7	◄ (Left cursor) / Volume	Navigates and changes settings in the OSD Quick Menu – For Volume
KEY8	SOURCE	Enter the Source menu (Not available on TW30x)

C. Connection ports



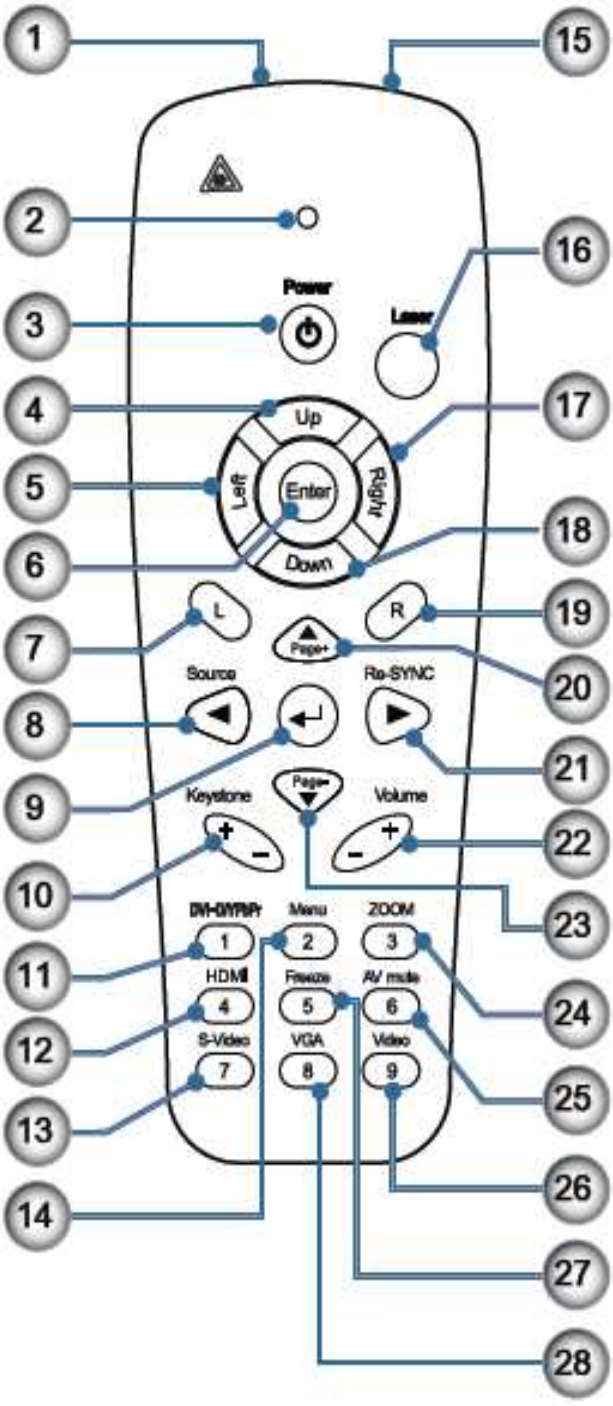
ITEM	LABEL	DESCRIPTION
1.	USB	Connect the USB CABLE from a computer
2.	VGA OUT	Connect the RGB CABLE to a display
3.	VGA IN	Connect the RGB CABLE from a computer and components
4.	VGA IN	Connect the RGB CABLE from a computer and components
5.	DVI-D IN	Connect the DVI CABLE from a computer and components
6.	HDMI IN	Connect an HDMI CABLE from an HDMI device
7.	S-VIDEO IN	Connect the S-VIDEO CABLE from a video device
8.	VIDEO IN	Connect the COMPOSITE CABLE from a video device
9.	DC OUT	Output 12Vdc(200ma) for display screen motor use

10.	Kensington Lock	Secure to permanent object with a Kensington® Lock system
11.	Speaker	Outputs audio sound
12.	IR RECEIVE	Receive IR signal from remote control
13.	AUDIO IN (L and R)	Connect the COMPOSITE CABLES from a video device
14.	AUDIO IN	Connect an AUDIO CABLE from the input device.
15.	RS-232	Connect RS-232 serial port cable for remote control
16.	AUDIO OUT	Connect an AUDIO CABLE for audio loop through
17.	LAN	Connect a LAN CABLE from Ethernet
18.	AC IN	Connect the POWER CABLE

Note:

If your video equipment has various input sources, it is recommended to connect in priority of HDMI/DVI, component (thru VGA), S-Video, Composite for better picture quality.

2-3. Remote control parts.



Important:

1. *Avoid using the projector with bright fluorescent lighting turned on. Certain high-frequency fluorescent lights can disrupt remote control operation.*

2. *Be sure nothing obstructs the path between the remote control and the projector. If the path between the remote control and the projector is obstructed, you can bounce the signal off certain reflective surfaces such as projector screens.*

3. *The buttons and keys on the projector have the same functions as the corresponding buttons on the remote control. This user's manual describes the functions based on the remote control.*

ITEM	LABEL	DESCRIPTION
1.	Laser	Use as on-screen pointer. **DO NOT POINT IN EYES**.
2.	Status LED	Lights when the remote control is used
3.	Power	Turns the projector on or off
4.	Up	Up key when connected through USB to a PC
5.	Left	Left key when connected through USB to a PC
6.	Enter	Enter key when connected through USB to a PC
7.	L	Left key when connected through USB to a PC
8.	Source/Left key	Detects the input device/Navigates and changes settings in the OSD.
9.	Enter	Navigates and changes settings in the OSD
10.	Keystone top/bottom	Corrects image-trapezoid (wider top/bottom) effect
11.	DVI-D/YPbPr/1	Changes the signal device to COMPONENT VIDEO.
12.	HDMI/4	Changes the signal device to HDMI
13.	S-VIDEO/7	Input source select S-Video
14.	MENU/2	Opens the OSD
15.	IR transmitter	Transmits signals to projector

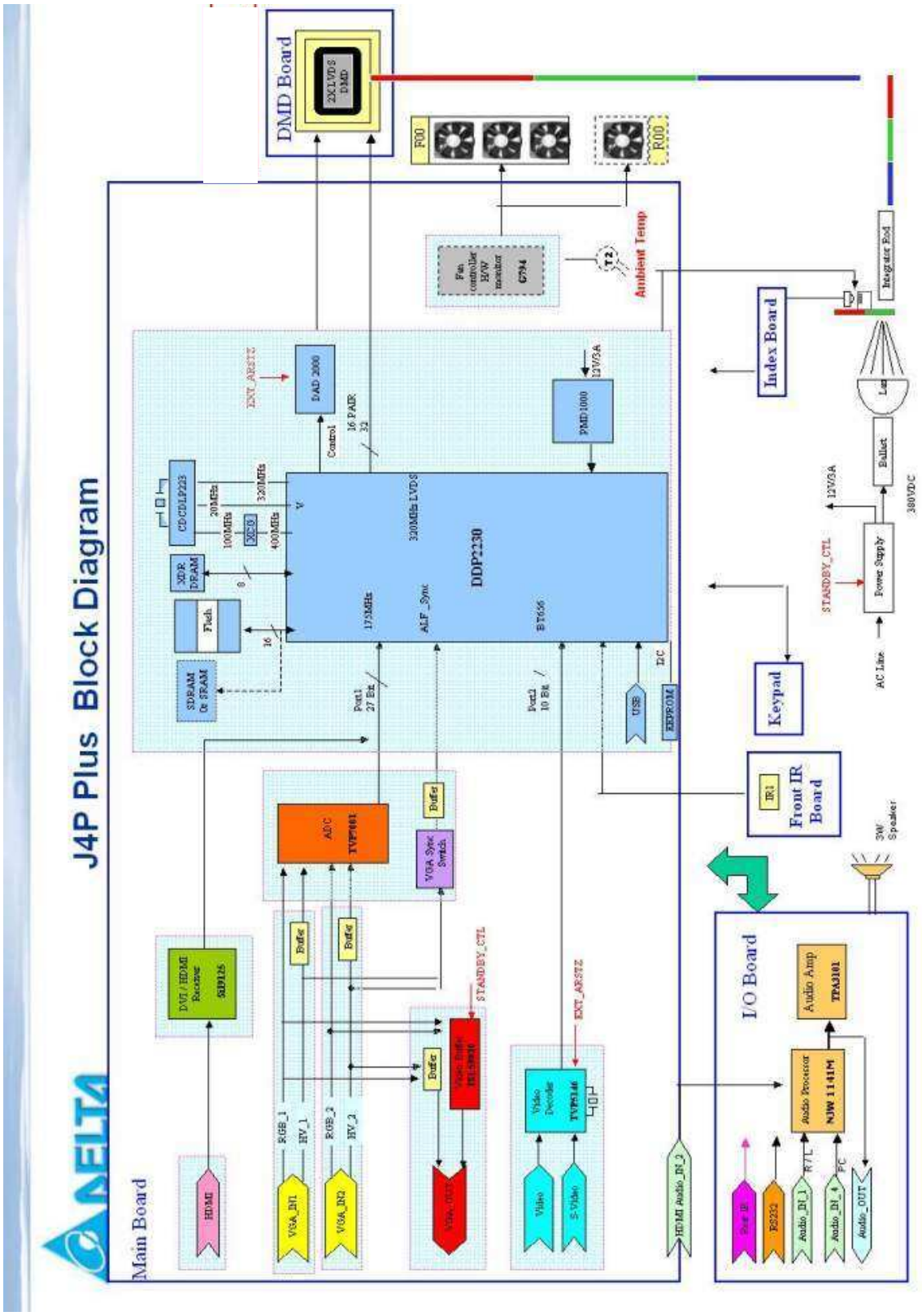
ITEM	LABEL	DESCRIPTION
16.	Laser	Press to operate the on-screen pointer
17.	Right	Right key when connected through USB to a PC
18.	Down	Down key when connected through USB to a PC
19.	R	Right key when connected through USB to a PC
20.	Page up/ Up Key	Page up when connected through USB to a PC Navigates and changes settings in the OSD
21.	Re-Sync/Right Key	Navigates and changes settings in the OSD
22.	Volume +/-	Speaker volume decrement and increment
23.	Page down/ Down Key	Page down when connected through USB to a PC Navigates and changes settings in the OSD
24.	ZOOM/3	Zoom in/out
25.	AV MUTE/6	Display blank and mute audio
26.	Video/9	Input source select Video
27.	Freeze/5	Freeze/unfreezes the on-screen picture
28.	VGA/6	Input source select VGA

Remote Control

If the remote control does not work

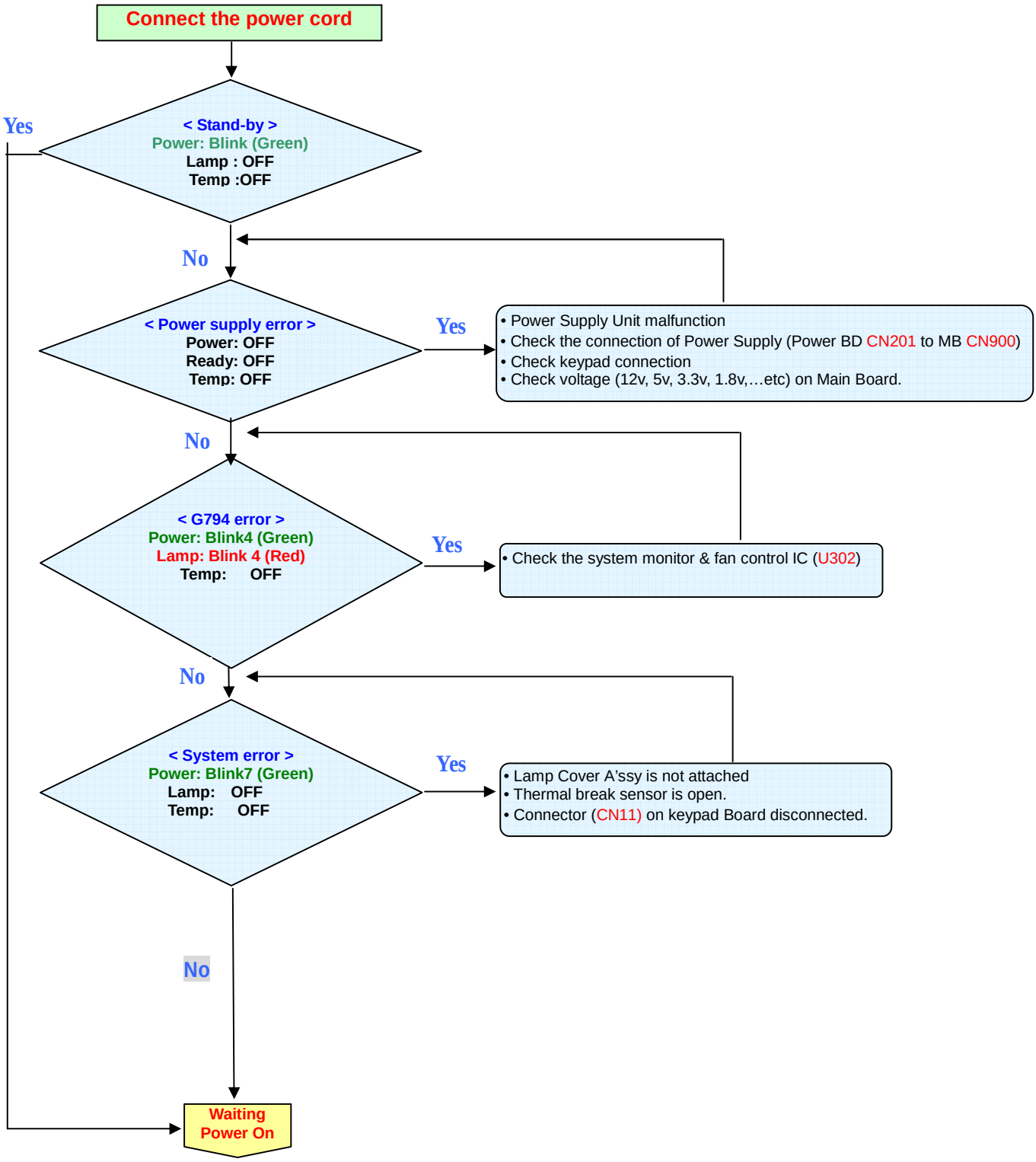
- Check the operating angle for the remote control is approximately ±15°.
- Make sure there are no obstructions between the remote control and the projector. Move to within 7m (23 ft) of the projector.
- Make sure the batteries are inserted correctly.
- Replace weak batteries in the remote control.

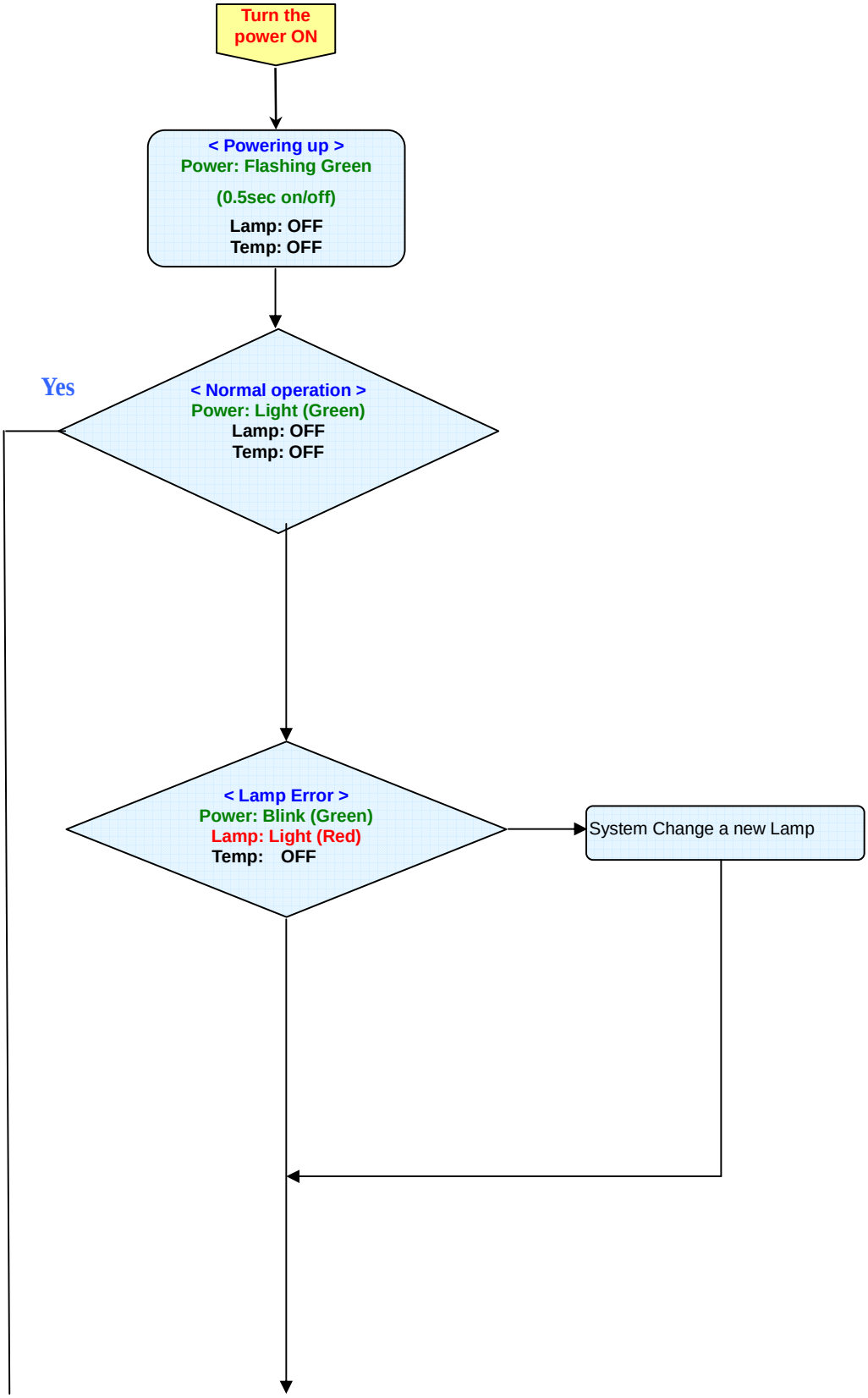
2-4. Block Diagram

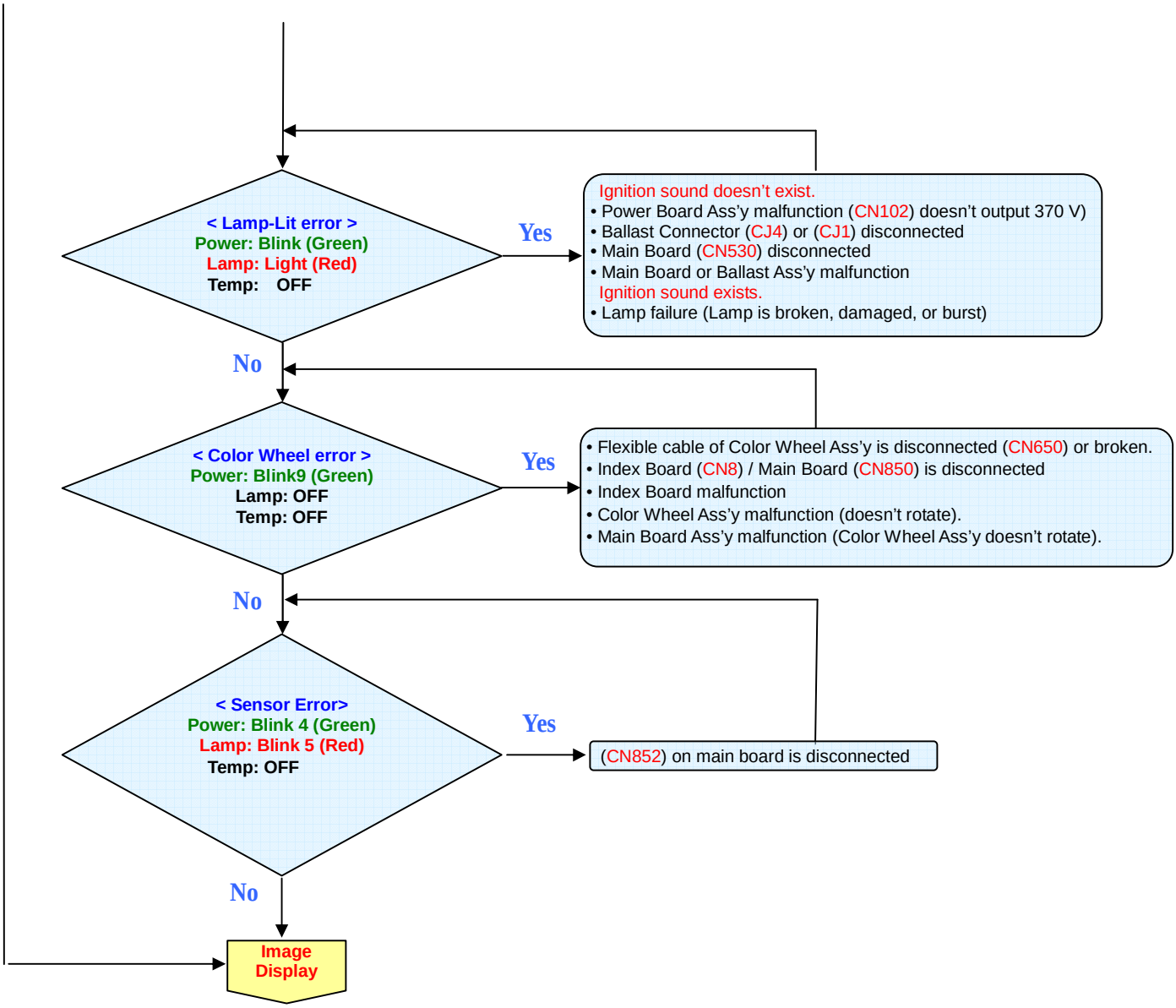


3. TROUBLE SHOOTING

By checking operations during normal usage time, it is possible to carry out judgments on malfunction to a certain extent. Carry out the following checks before disassembling the equipment.




Turn the power ON
< Powering up >
Power: Flashing Green
(0.5sec on/off)
Lamp: OFF
Temp: OFF
< Normal operation >
Power: Light (Green)
Lamp: OFF
Temp: OFF
Yes
< Lamp Error >
Power: Blink (Green)
Lamp: Light (Red)
Temp: OFF
System Change a new Lamp


< Lamp-Lit error >
Power: Blink (Green)
Lamp: Light (Red)
Temp: OFF
Yes
Ignition sound doesn't exist.
• Power Board Ass'y malfunction (CN102) doesn't output 370 V)
• Ballast Connector (CJ4) or (CJ1) disconnected
• Main Board (CN530) disconnected
• Main Board or Ballast Ass'y malfunction
Ignition sound exists.
• Lamp failure (Lamp is broken, damaged, or burst)
No
< Color Wheel error >
Power: Blink9 (Green)
Lamp: OFF
Temp: OFF
Yes
• Flexible cable of Color Wheel Ass'y is disconnected (CN650) or broken.
• Index Board (CN8) / Main Board (CN850) is disconnected
• Index Board malfunction
• Color Wheel Ass'y malfunction (doesn't rotate).
• Main Board Ass'y malfunction (Color Wheel Ass'y doesn't rotate).
No
< Sensor Error>
Power: Blink 4 (Green)
Lamp: Blink 5 (Red)
Temp: OFF
Yes
(CN852) on main board is disconnected
No
Image Display

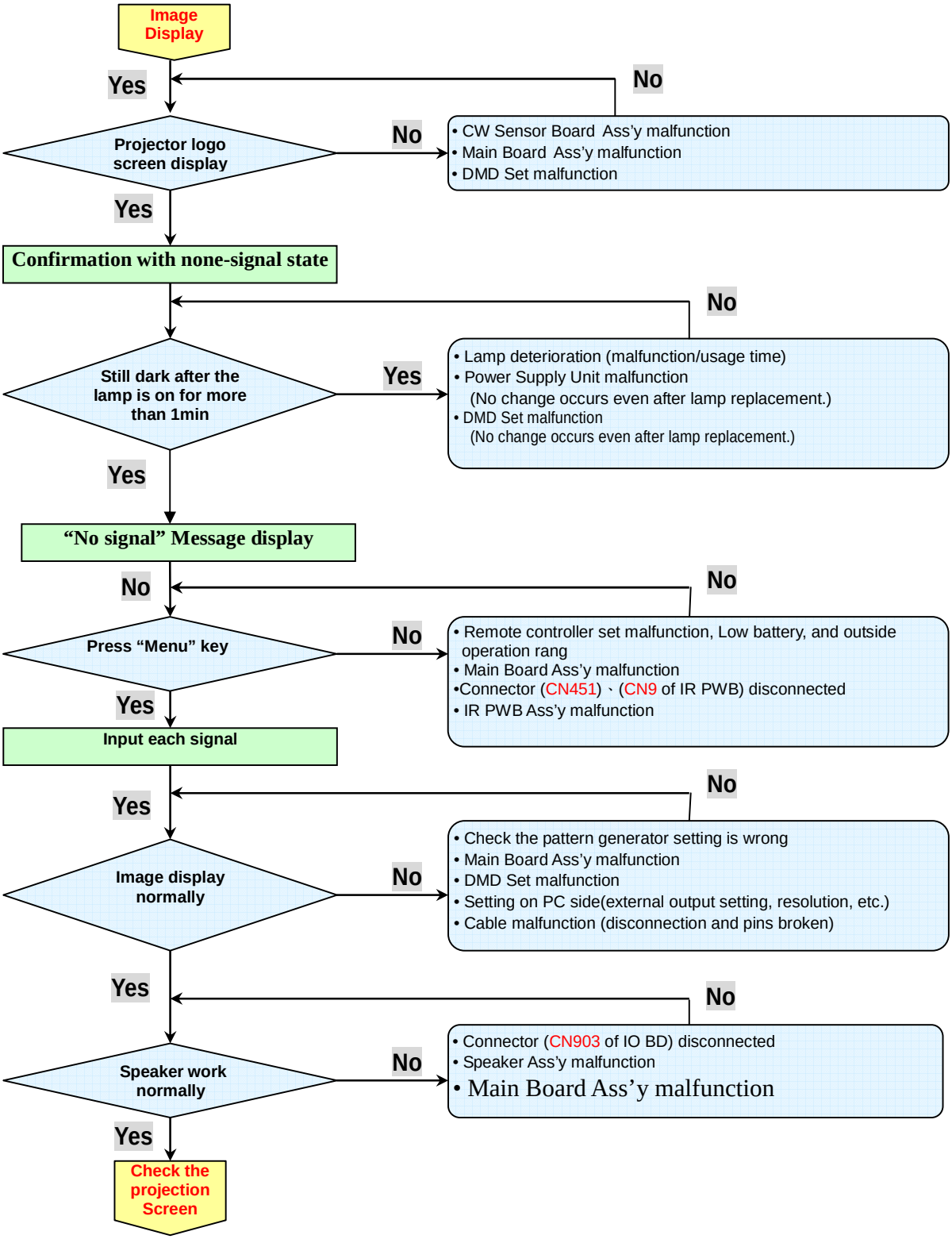
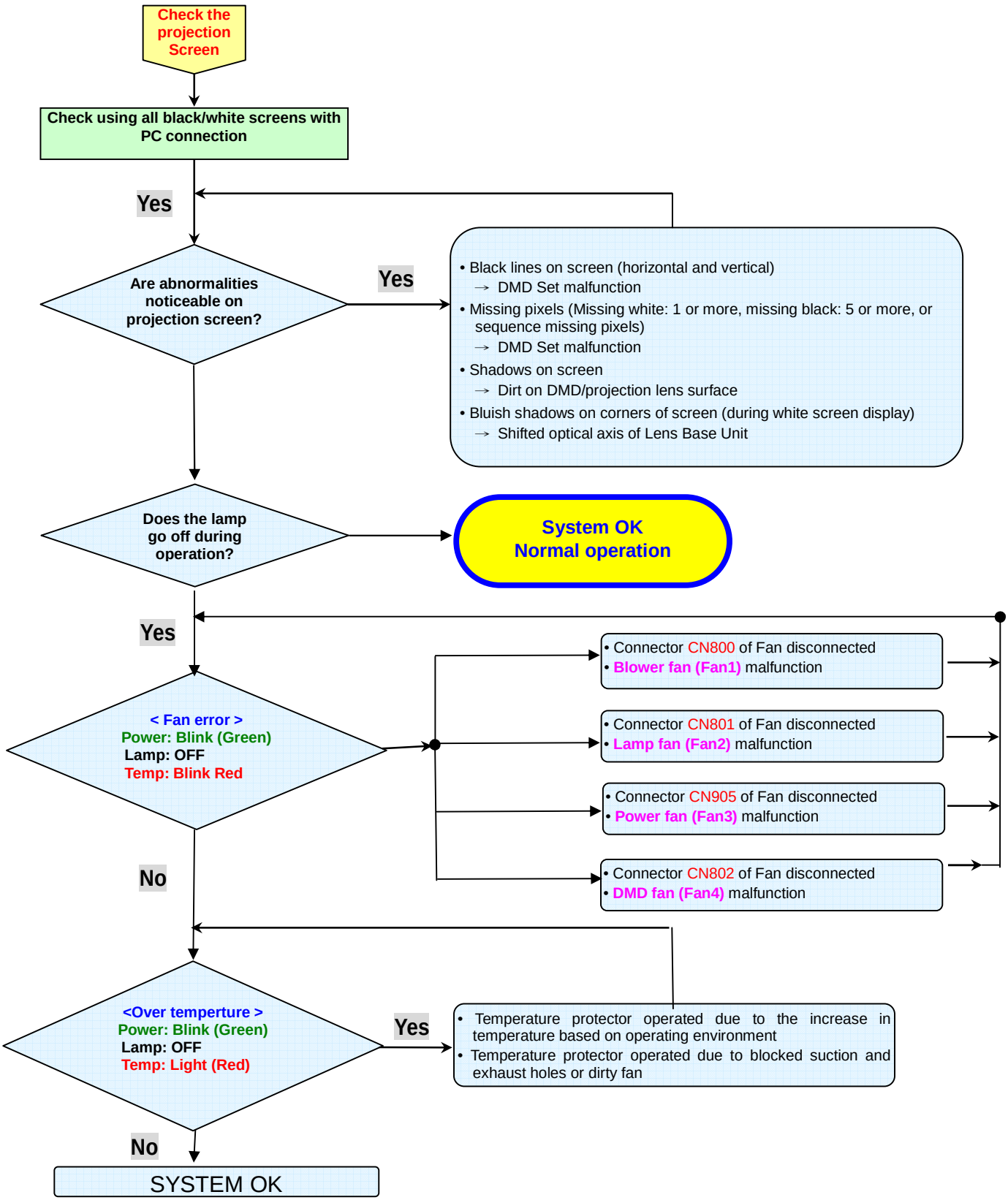


Image Display
Yes
No
Projector logo screen display
No
• CW Sensor Board Ass'y malfunction
• Main Board Ass'y malfunction
• DMD Set malfunction
Yes
Confirmation with none-signal state
No
Still dark after the lamp is on for more than 1min
Yes
• Lamp deterioration (malfunction/usage time)
• Power Supply Unit malfunction
(No change occurs even after lamp replacement.)
• DMD Set malfunction
(No change occurs even after lamp replacement.)
Yes
"No signal" Message display
No
No
Press "Menu" key
No
• Remote controller set malfunction, Low battery, and outside operation rang
• Main Board Ass'y malfunction
•Connector (CN451)、(CN9 of IR PWB) disconnected
• IR PWB Ass'y malfunction
Yes
Input each signal
No
Yes
Image display normally
No
• Check the pattern generator setting is wrong
• Main Board Ass'y malfunction
• DMD Set malfunction
• Setting on PC side(external output setting, resolution, etc.)
• Cable malfunction (disconnection and pins broken)
Yes
No
Speaker work normally
No
• Connector (CN903 of IO BD) disconnected
• Speaker Ass'y malfunction
• Main Board Ass'y malfunction
Yes
Check the projection Screen


Check the projection Screen
Check using all black/white screens with PC connection
Yes
Are abnormalities noticeable on projection screen?
Yes
• Black lines on screen (horizontal and vertical)
→ DMD Set malfunction
• Missing pixels (Missing white: 1 or more, missing black: 5 or more, or sequence missing pixels)
→ DMD Set malfunction
• Shadows on screen
→ Dirt on DMD/projection lens surface
• Bluish shadows on corners of screen (during white screen display)
→ Shifted optical axis of Lens Base Unit
Does the lamp go off during operation?
System OK
Normal operation
Yes
< Fan error >
Power: Blink (Green)
Lamp: OFF
Temp: Blink Red
• Connector CN800 of Fan disconnected
• Blower fan (Fan1) malfunction
• Connector CN801 of Fan disconnected
• Lamp fan (Fan2) malfunction
• Connector CN905 of Fan disconnected
• Power fan (Fan3) malfunction
• Connector CN802 of Fan disconnected
• DMD fan (Fan4) malfunction
No
<Over temperture >
Power: Blink (Green)
Lamp: OFF
Temp: Light (Red)
Yes
• Temperature protector operated due to the increase in temperature based on operating environment
• Temperature protector operated due to blocked suction and exhaust holes or dirty fan
No
SYSTEM OK

Common problems and solutions

These guidelines provide tips to deal with problems you may encounter while using the projector. If the problem remains unsolved, contact your dealer for assistance.

Often after time spent troubleshooting, the problem is traced to something as simple as a loose connection.

Check the following before proceeding to the problem-specific solutions.

- *Use some other electrical device to confirm that the electrical outlet is working.*
- *Ensure the projector is turned on.*
- *Ensure all connections are securely attached.*
- *Ensure the attached device is turned on.*
- *Ensure a connected PC is not in suspending mode.*

Ensure a connected notebook computer is configured for an external display. (This is usually done by pressing an Fn-key combination on the notebook.)

Image Problems

Problem: No image appears on the screen

1. Verify the settings on your notebook or desktop PC.
2. Turn off all equipment and power up again in the correct order.

Problem: The image is blurred

1. Adjust the **Focus** on the projector.
2. Press the **Re-sync** button on the remote control or projector.
3. Ensure the projector-to-screen distance is within the 10-meter (33-feet) specified range.
4. Check that the projector lens is clean.

Problem: The image is wider at the top or bottom (trapezoid effect)

1. Position the projector so it is as perpendicular to the screen as possible.
2. Use the Keystone button on the remote control or projector to correct the problem.

Problem: The image is reversed

Check the **Projection** setting on the **Setup** menu of the OSD.

Problem: The image is streaked

1. Set the **Frequency** and **Phase** settings on the **Computer** menu of the OSD to the default settings.
2. To ensure the problem is not caused by a connected PC's video card, connect to another computer.

Problem: The image is flat with no contrast

Adjust the **Contrast** setting on the **Image** menu of the OSD.

Problem: The color of the projected image does not match the source image.

Adjust the **Color Temperature** and **Gamma** settings on the **Image** menu of the OSD.

Lamp Problems

Problem: There is no light from the projector

1. Check that the power cable is securely connected.
2. Ensure the power source is good by testing with another electrical device.
3. Restart the projector in the correct order and check that the Power LED is still green.
4. If you have replaced the lamp recently, try resetting the lamp connections.
5. Replace the lamp module.
6. Put the old lamp back in the projector and have the projector serviced.

Problem: The lamp goes off

1. Power surges can cause the lamp to turn off. Re-plug power cord. When the Ready LED is on, press the power button.
2. Replace the lamp module.
3. Put the old lamp back in the projector and have the projector serviced.

Remote Control Problems

Problem: The projector does not respond to the remote control

1. Direct the remote control towards remote sensor on the projector.
2. Ensure the path between remote and sensor is not obstructed.
3. Turn off any fluorescent lights in the room.
4. Check the battery polarity.
5. Replace the batteries.
6. Turn off other Infrared-enabled devices in the vicinity.
7. Have the remote control serviced.

Audio Problems

Problem: There is no sound

1. Adjust the volume on the remote control.
2. Adjust the volume of the audio source.
3. Check the audio cable connection.
4. Test the source audio output with other speakers.
5. Have the projector serviced.

Problem: The sound is distorted

1. Check the audio cable connection.
2. Test the source audio output with other speakers.
3. Have the projector serviced.

4. DISASSEMBLY

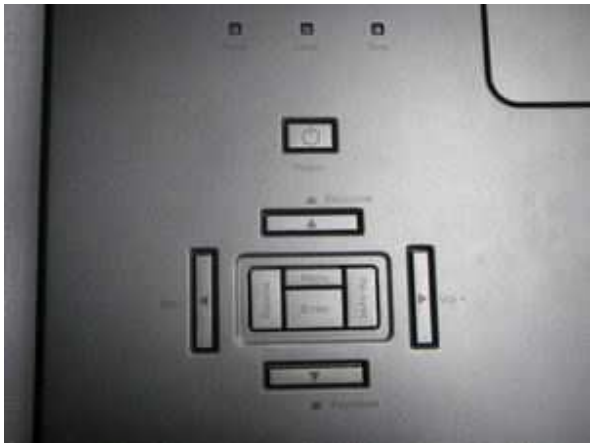
Removing the Lamp Cover and Lamp Module

DISASSEMBLY

Look the full set projector.

Look at the IO side.

Look at the case of top side.



Look at the keypad of top side.

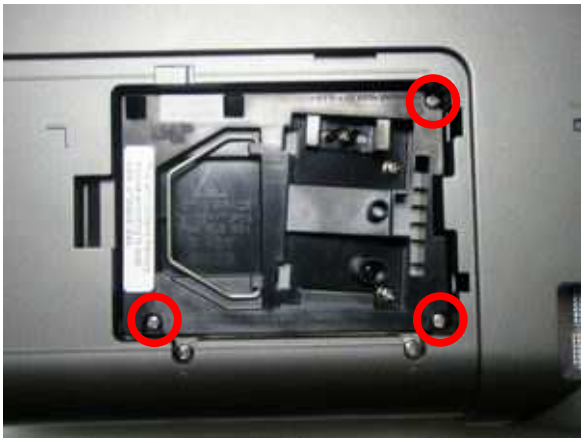
Remove this screw.

Look the screws (S01).

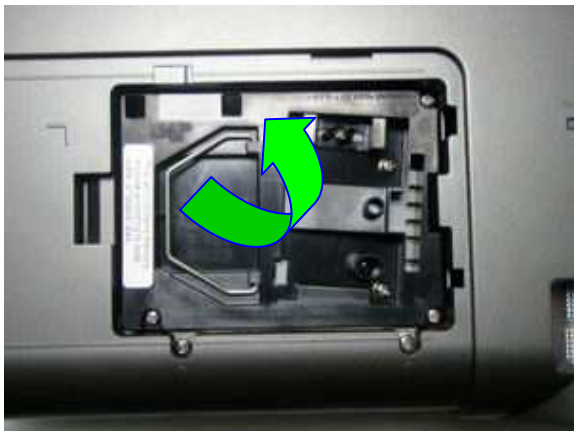
Removing the Lamp Cover and Lamp Module

DISASSEMBLY

Review the projector



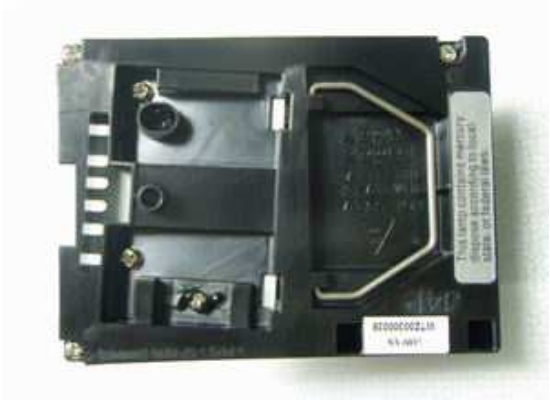
Loose the three screws.



Remove the lamp modules.

Look the Lamp #1.

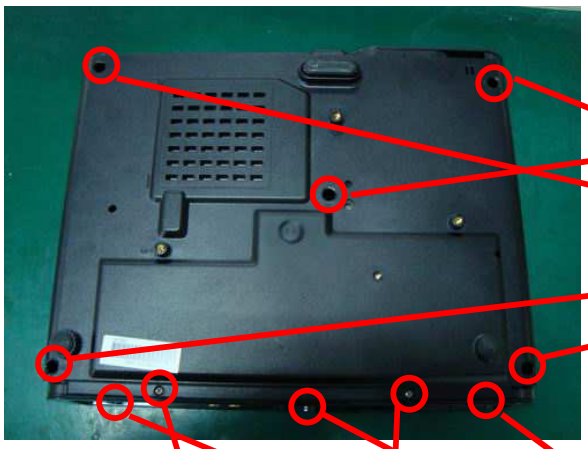
Look the Lamp #2.



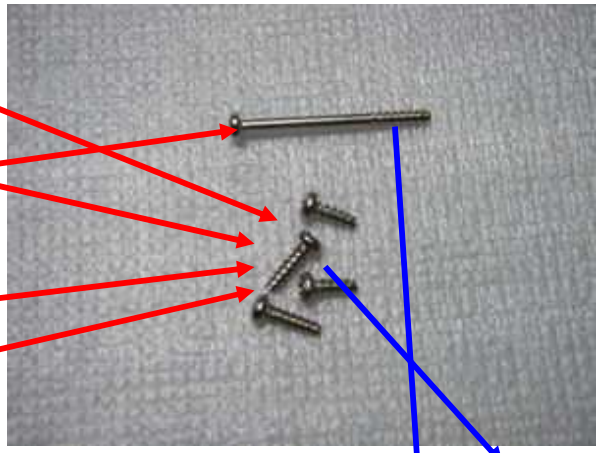
Look the Lamp #3.

Removing Top Cover

DISASSEMBLY

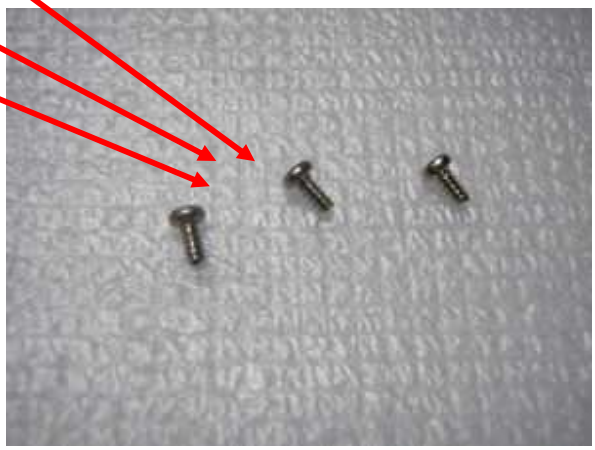


Remove the ten screws.

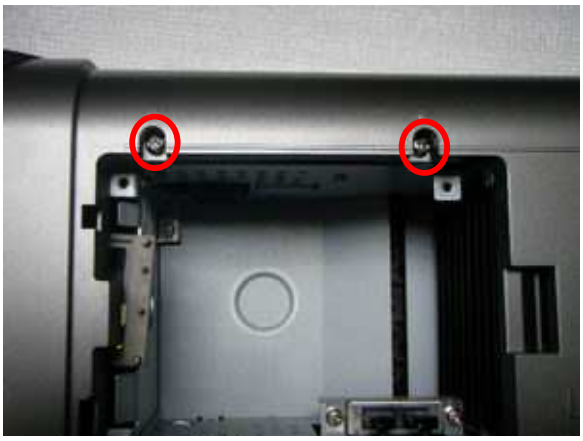


Review the five screws (S02)&(S03).

Review the two screws (S03).



Review the three screws (S04).

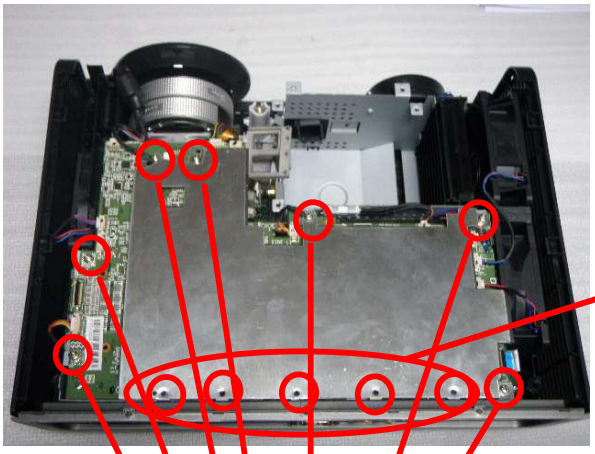


Remove the two screws.

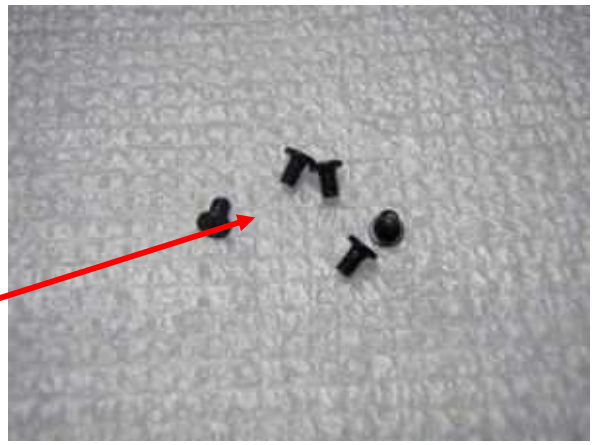
Review the two screws. (S05)

Removing the Main Board

DISASSEMBLY



Remove these screws.



Review the five piece screws (S06).

Review the seven piece screws (S05) and take off the main shield.

Remove these eight + one screws.

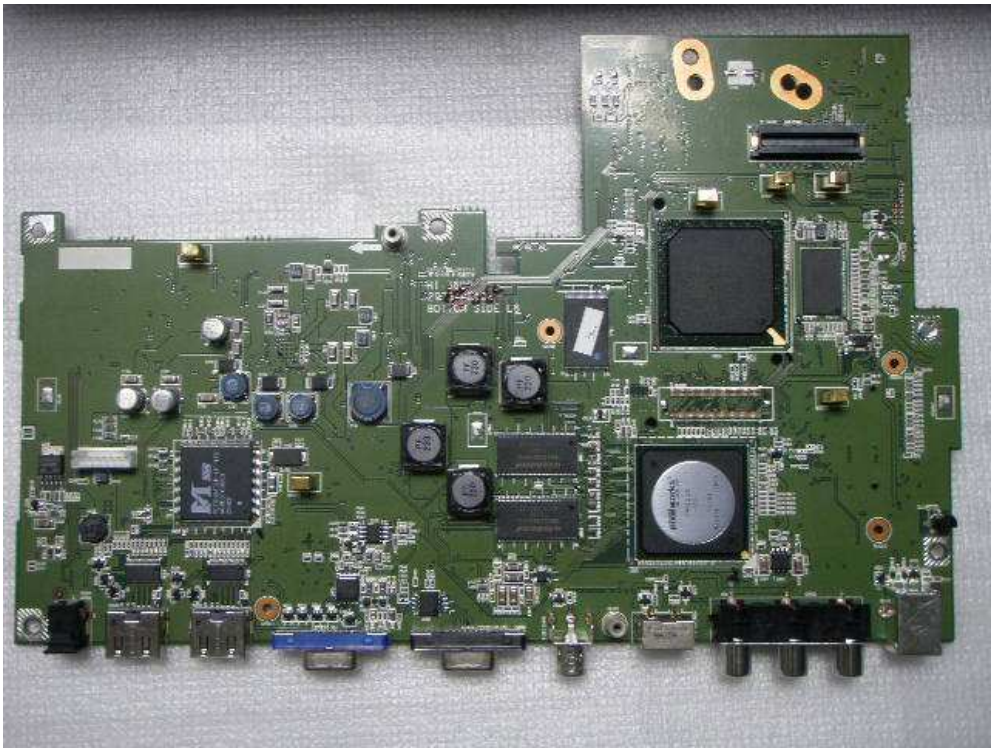
Review the eight screws (S07).

Review the screws (S08).

Review the Main Board

DISASSEMBLY

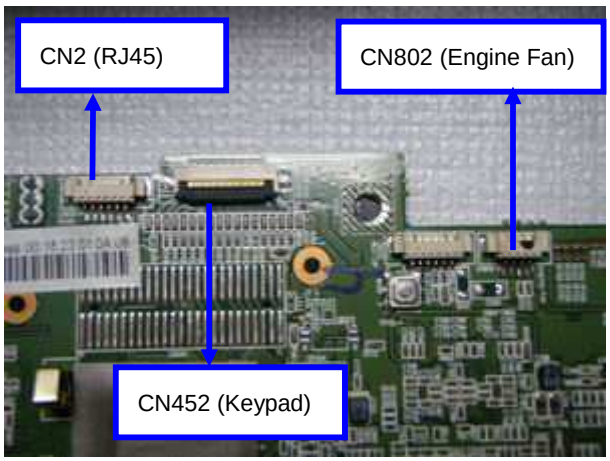
Review the main board#1.



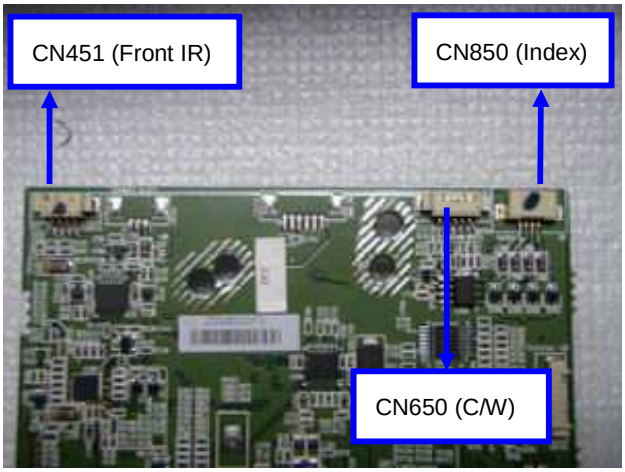
Review the main board#2.

Review the Main Board Connector

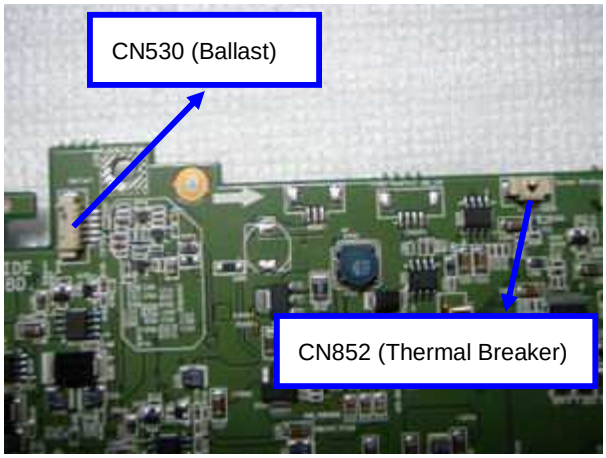
DISASSEMBLY



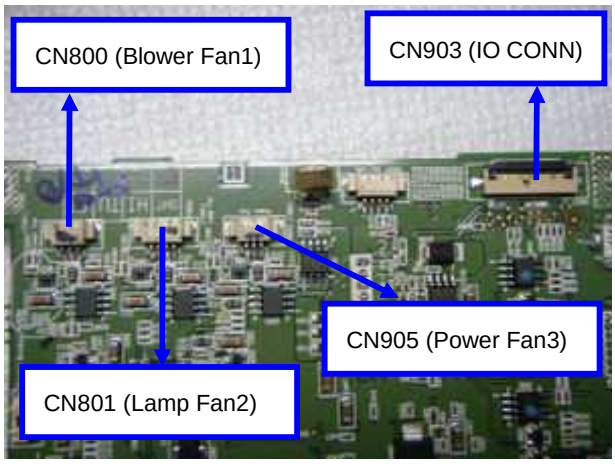
Remove the Connectors.



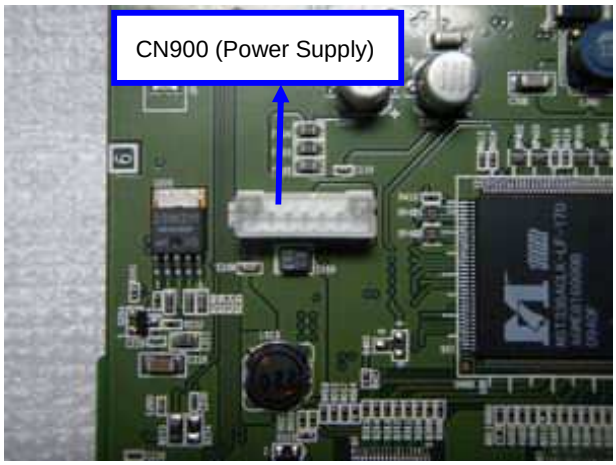
Remove the Connectors.



Remove the Connectors.



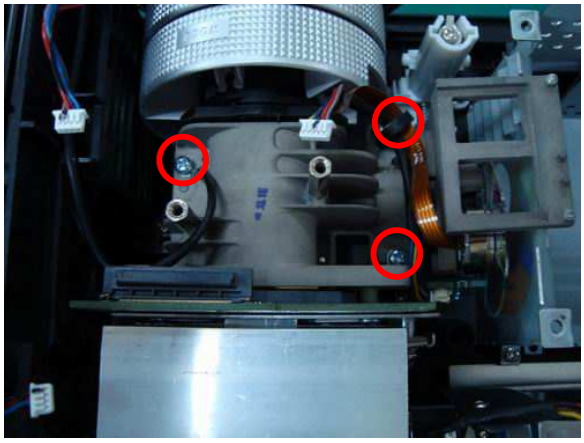
Remove the Connectors.



Remove the Connector.

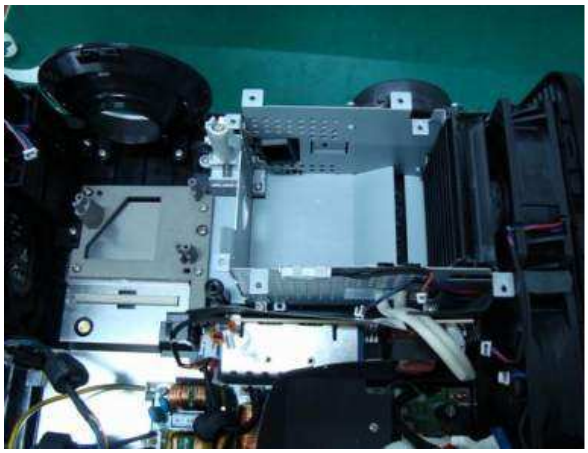
Removing Optical Engine

DISASSEMBLY



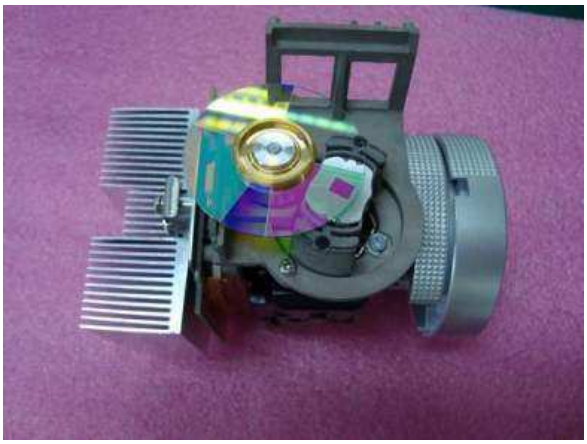
Remove the three screws.

Review the three screws (S09).



The Optical Engine is removed.

Review the Optical Engine #1.

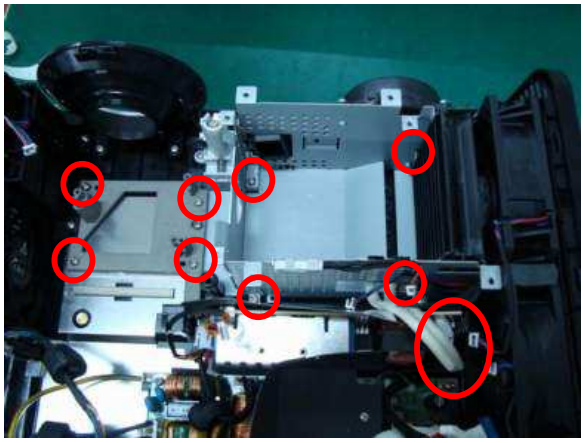


Review the Optical Engine #2.

Review the Optical Engine #3.

Removing LAMP CHANNEL and Fans

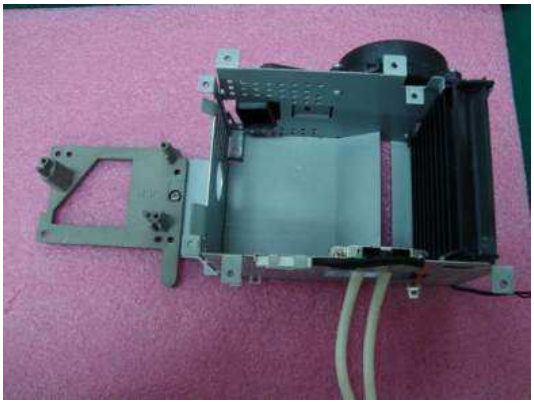
DISASSEMBLY



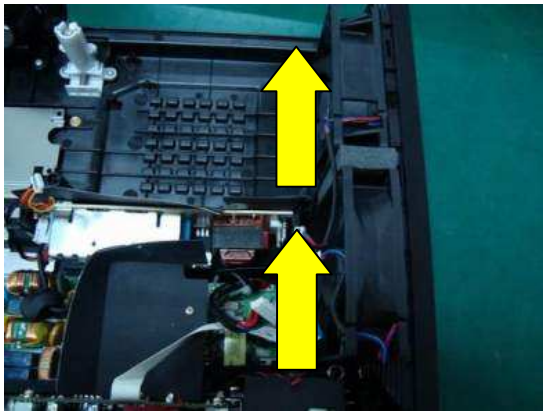
Remove these eight screws and notice the ballast connector

Review the four screws (S03).

Review the four screws (S03).



Review the lamp channel.

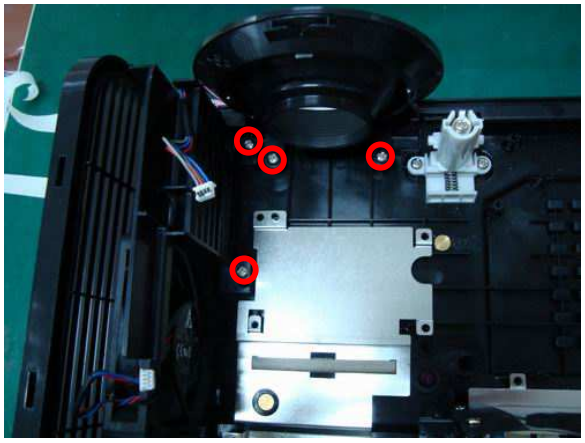


Remove the two FANS.

Review the FANS.

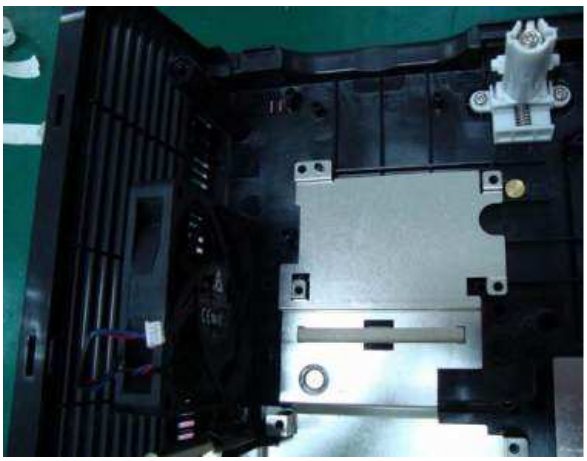
Removing the Optical cap, shield and Fan

DISASSEMBLY

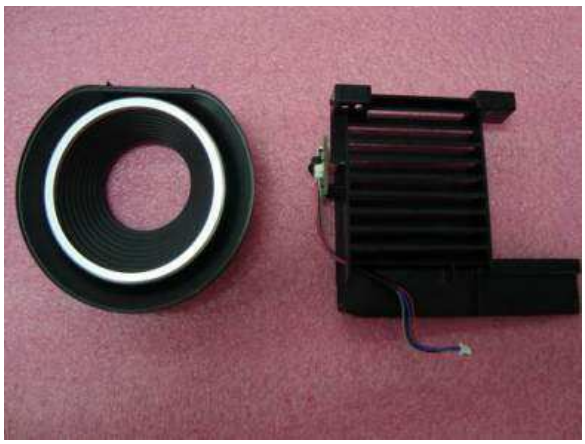


Remove the four screws.

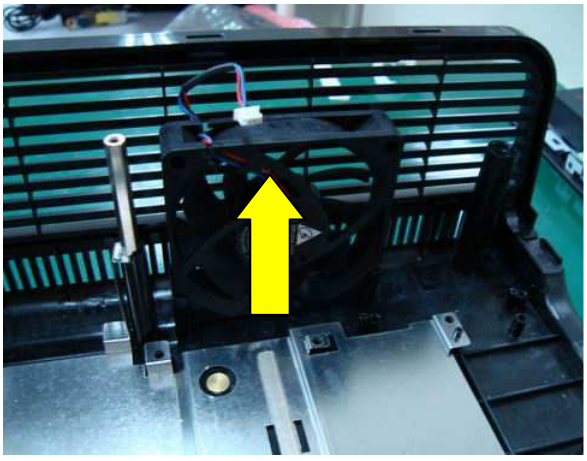
Review the four screws (S03).



Remove the Optical cap and shield.



Review the Optical cap and shield.

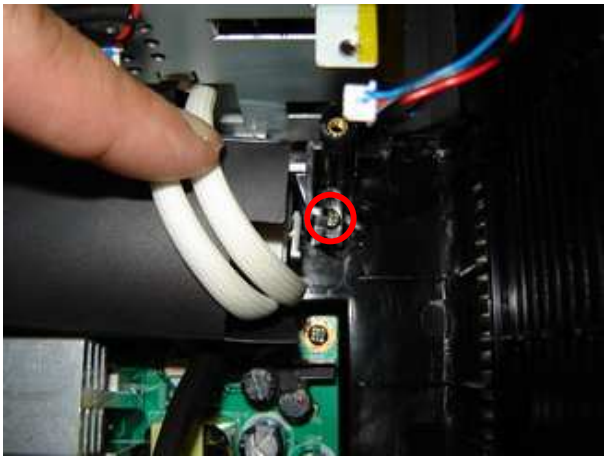


Remove the FAN.

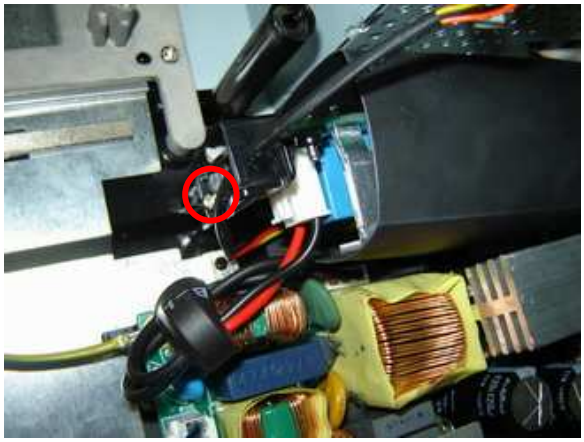
Review the FAN.

Removing the Ballast Board

DISASSEMBLY



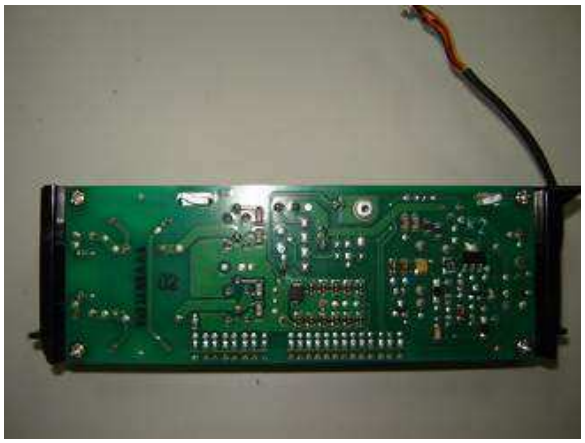
Remove the screw.



Remove the screw.

Review the two screws (S03).

Review the Ballast (Top side).

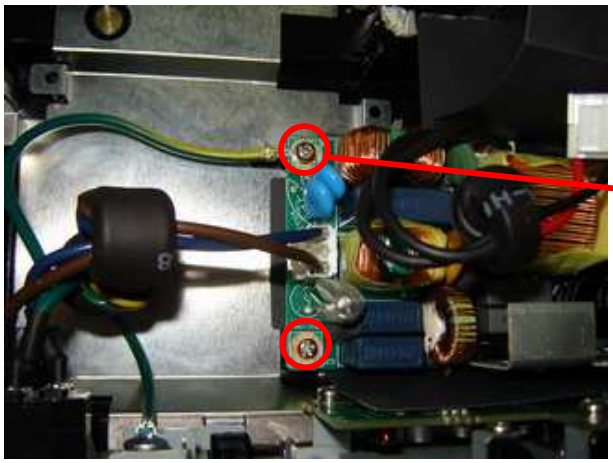


Review the Ballast (Bottom side).

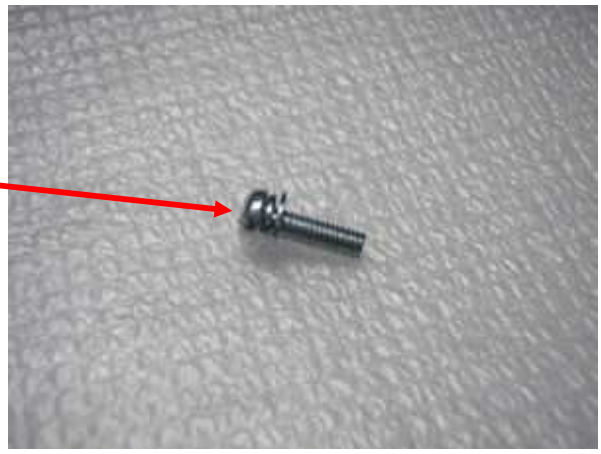
Remove the two screws.

Removing the Power Board

DISASSEMBLY

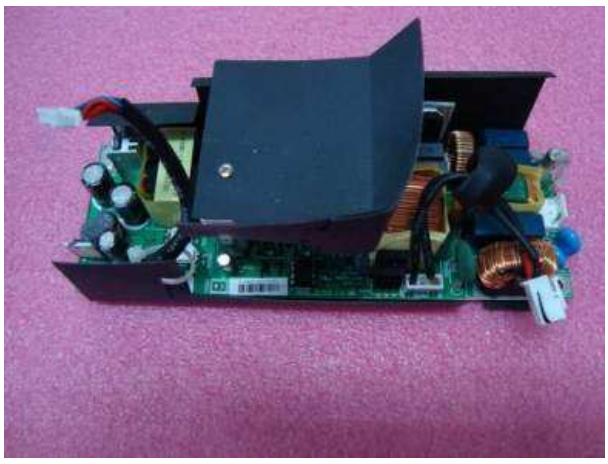


Remove the two screws.

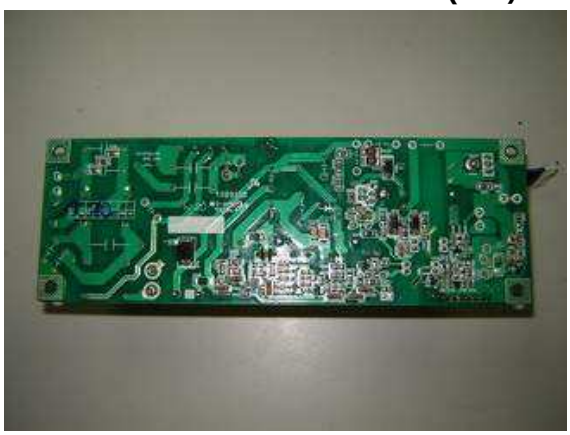


Review the screw (S10).

Review other three screws (S03).

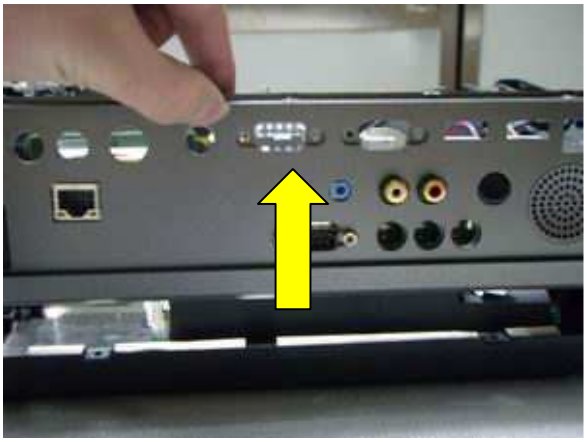


Review the Power Board (Top Side).

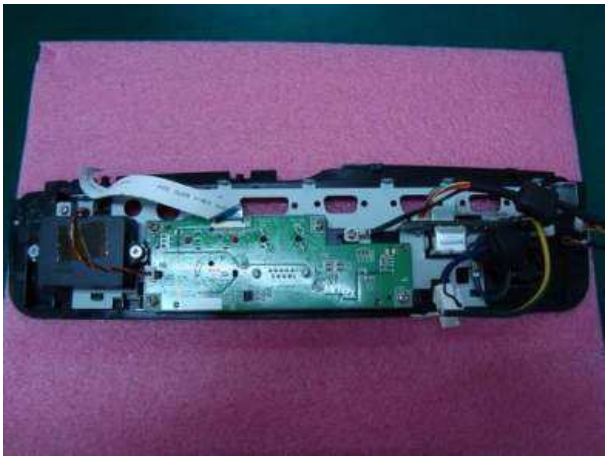


Review the Power Board (Bottom Side).

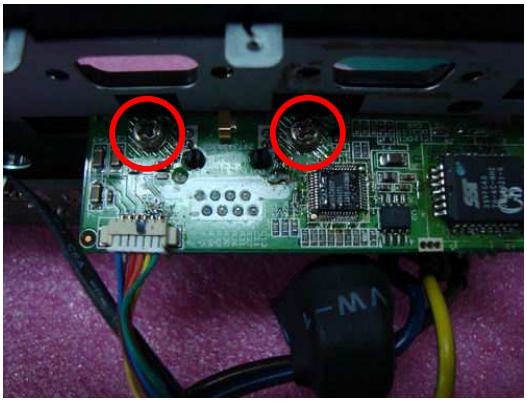
Removing the I/O ASSY and RJ45 Board



Remove the I/O ASSY.

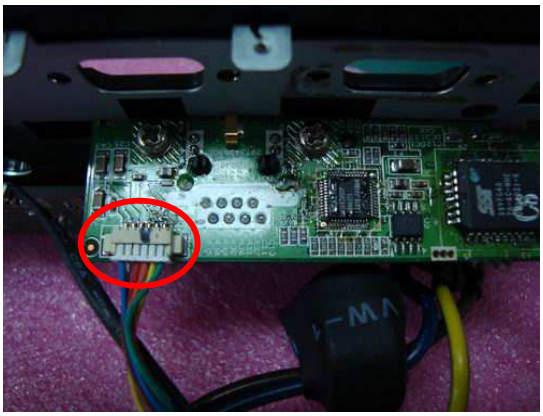


Review the I/0 ASSY.



Remove the two screws.

Review the two screws (S05).

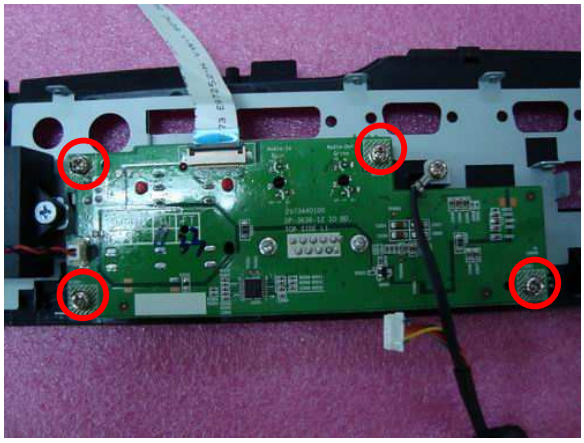


Remove the RJ45 wire.

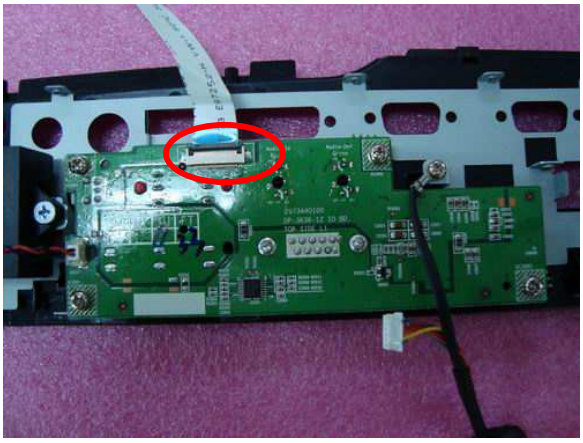
Review the RJ45 Board.

Removing the IO board and ADJ ASSY

DISASSEMBLY



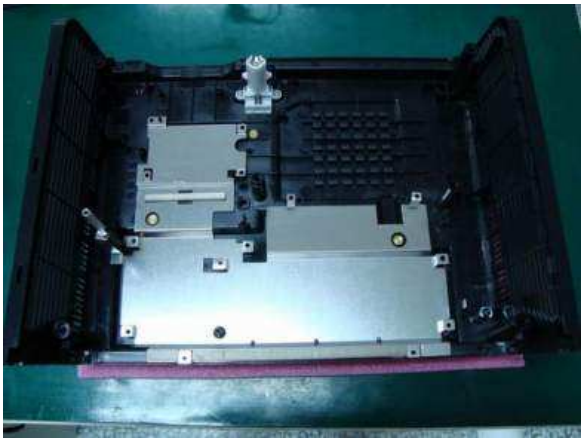
Remove these four screws.



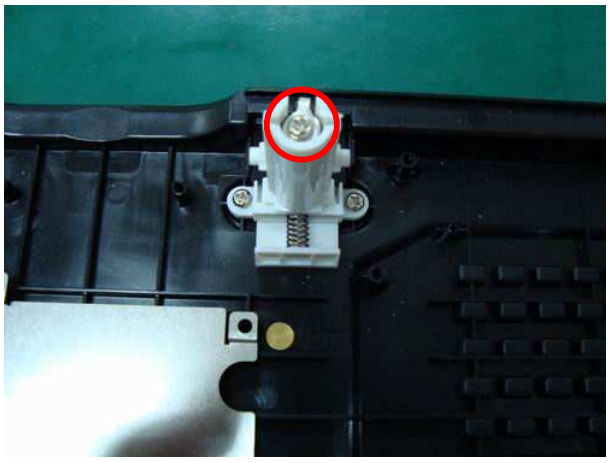
Remove the FCC wire .

Review the four screws (S05).

Review the IO BOARD



Review the bottom cover.

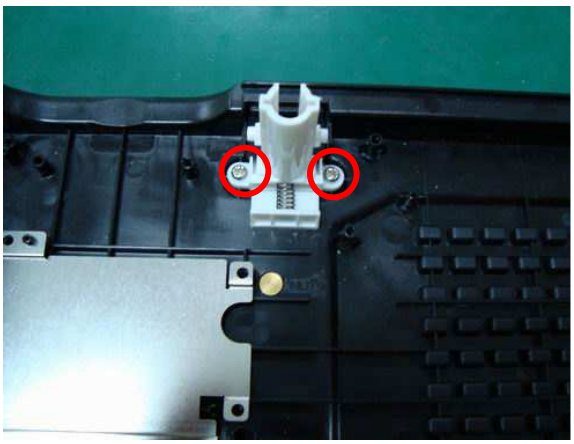


Remove the screw.

Removing the ADJ ASSY

Push this remove the ADJ FOOT.

Review the ADJ FOOT.



Remove the two screws.

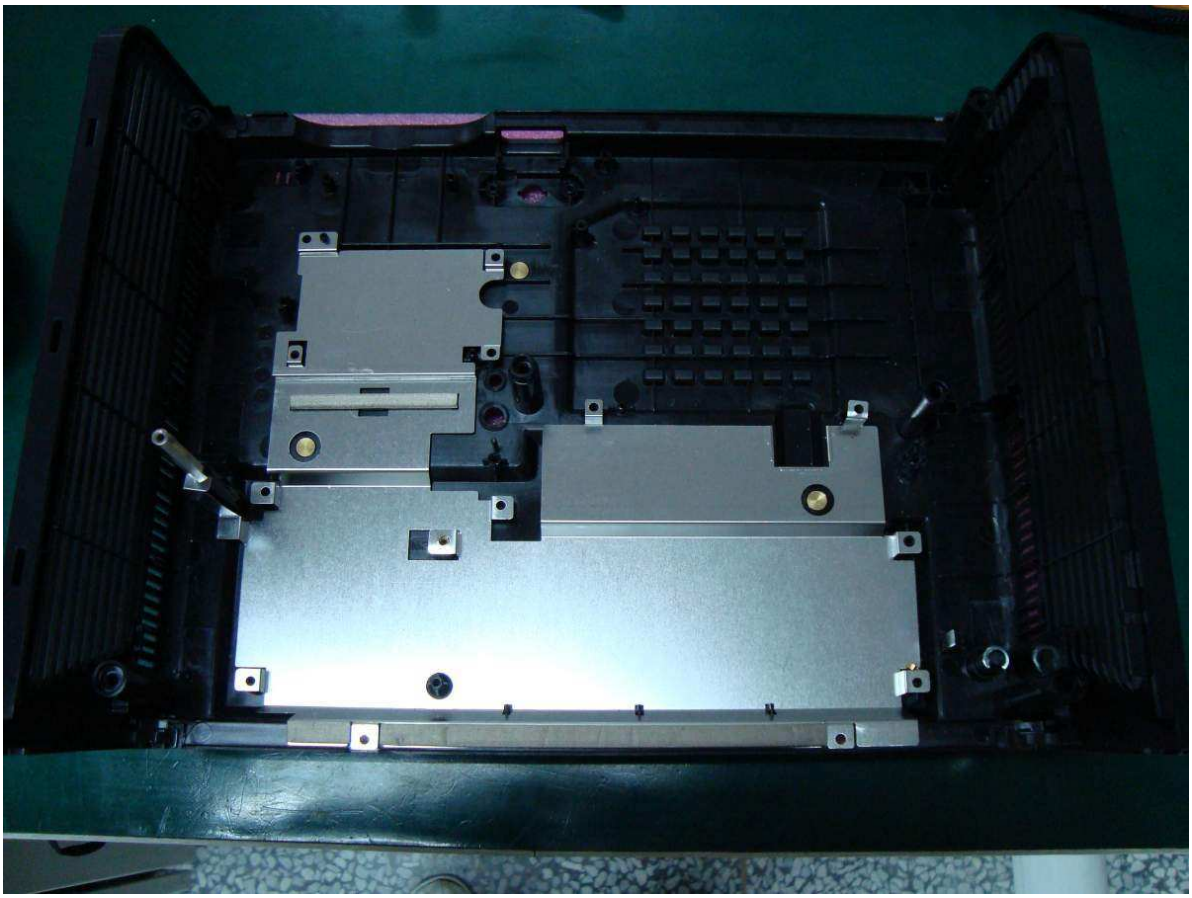
Review the two screws (S03).

Review the ADJ ASSY parts.

Review the bottom cover.

Review the BOTTOM COVER

DISASSEMBLY



Appendix. Screw torque

ITEM-S	Screw Type	P/N	Screw Driver Torque (KG-CM)
S01	M3*0.5*5	3105221300	1.5-2.0kgf.cm
S02	φ3*0.5*34	3109183300	5.5-6.5kgf.cm
S03	M 3*0.5*8	3106160400	5.5-6.5kgf.cm
S04	M 2*0.2*4	3105040800	1.5-2.0kgf.cm
S05	M3*0.5*6	3100320600	5.5-6.5kgf.cm
S06	M2*0.3*3	3105134900	1.5-2.0kgf.cm
S07	HEX 4.7*4	3461431703	4-5kgf.cm
S08	M3*0.5*4	3100430400	4-5kgf.cm
S09	M3*0.5*10	3100301000	5.5-6.5kgf.cm
S10	M3*0.5*8	3100300800	5.5-6.5kgf.cm

5. Firmware Download

5-1. Projector USB Drivers Installation Guide

The document is to describe the Windows application software "**Flash-Tool**" for projector firmware.
Its main purpose is to provide a detailed procedure of upgrading the application software of a DLP™ projector.
The system requirement and the installation procedure of "**Flash-Tool"** are also included in the document.

Note:
The user must have administrative privileges on the target computer in order to install your driver.
The installation target directory must not write protected.
User also required having the basic knowledge of Windows application installation.
Attention: This utility is for DLP™ DDP2000/3020/2230/243X series projector only.

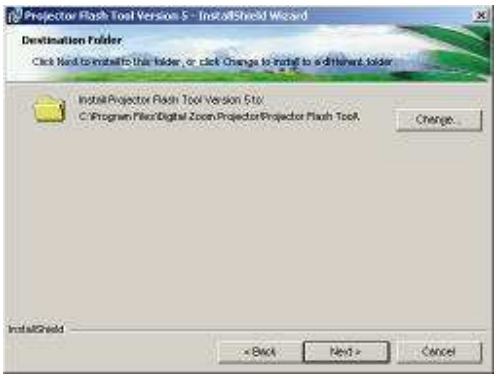
System Requirement

1. IBM compatible PC.
2. Windows XP-SP2 operating system.

Install Flash-Tool to PC

Run the "**Digital Zoom Projector Flash Tool V6.0.2.msi**" or above version , it will automatically launch the USB drivers update. Following are the dialogues of the Driver Install process as below.

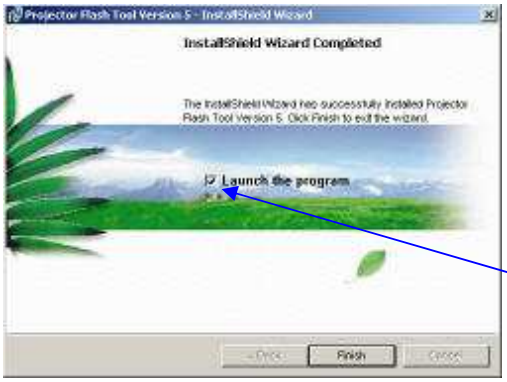
(Step 1) This is the first page of install dialog.
Click on the "Next" button to continue, or Click on the "Cancel" button to cancel the installation.



(Step 2) Driver Destination:
Click on the "Change" button to change the default directory for saving the driver file somewhere else, or Click on the "Back" button to return to the previous page, or Click on the "Cancel" button to cancel the installation

(Step 3) Ready to install the drivers into the PC, press <Install> to start.

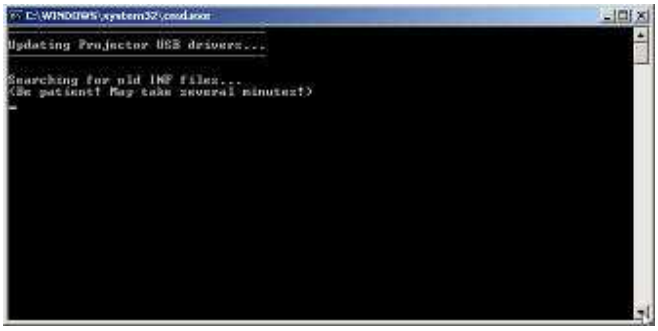
(Step 4) The Installer copies the necessary files to PC.



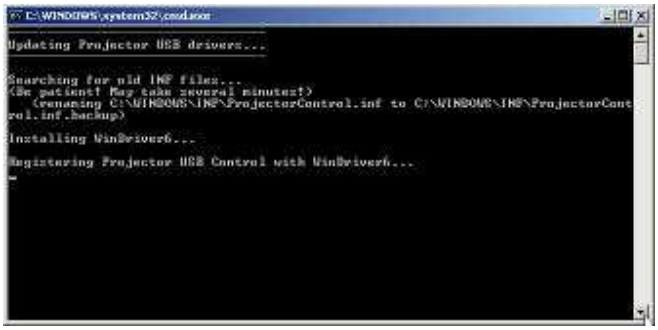
(Step 5) Press the <Finish> button with the “Launch” checkbox checked, the wizard will start the USB driver (INF) update.

Launch the driver update

Note: The USB driver (INF) update may take a few minutes depending your computer’s performance, and number of driver files. All dialogs will be automatically closed when the installation is

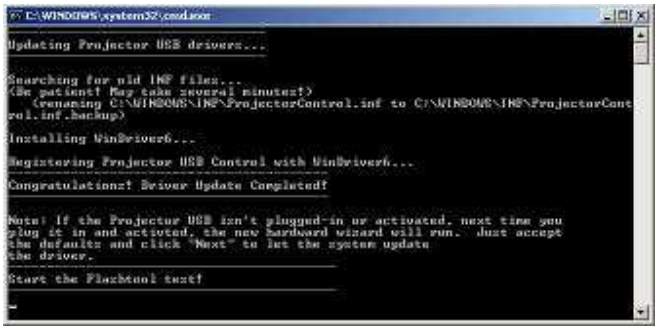


(Step 6) The install program copy the new INF into Windows directory, it will search the old INF and replace it with the newer one.

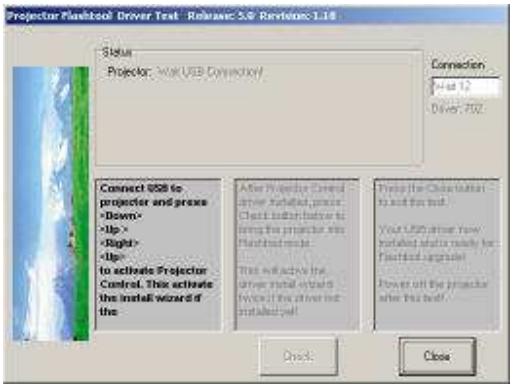


(Step 7) Remove the USB cable between PC and projector if it is connected.

The WinDrive USB drivers will be installed and registered to system.



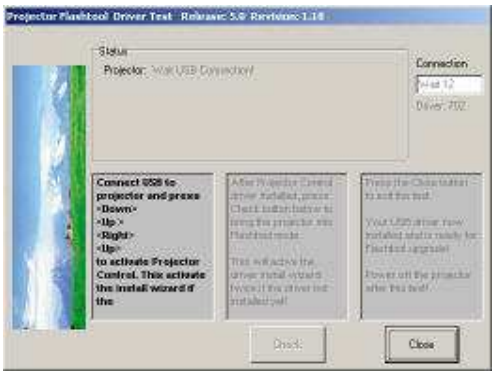
(Step 8) After the driver install, a test application will start automatically with Windows hardware wizard for all necessary USB driver.



(Step 9) The driver test launched, wait for the key stroke to enter Projector Control mode…

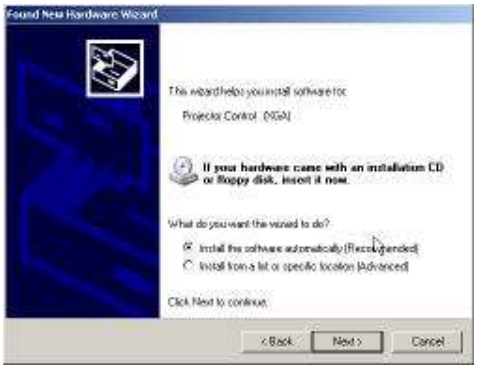
Connect the USB cable now!

If the driver test application does not launch automatically, run the “Launch FlashToolBL.exe” from installed short cut at **Program> Digital Zoom Projector> projector flashtool> Launch FlasToolBL.exe**



(Step 10) Make sure that the USB cable is firmly connected between projector and computer connect the power cord to the projector, and move the power switch in its ON position (if available) so that projector is in the STAND BY mode
Press <Down>, <Up>, <Right>, <Up> key in sequence on keypad. The power and lamp LED will blink and the Projector Control mode will be enabled.

(Step 11) The New Hardware Wizard launched at the first time Windows detects a new USB device attached. Select “No, not this time” and Click on the “Next” button to continue. (This dialog may change on different Windows version)

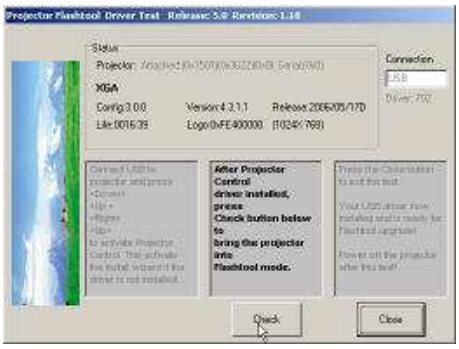


(Step 12) Select “Install the software automatically” Click on the “Next” button to continue.
In case the wizard cannot find the driver (the ProjectorControl.inf), please select the other advanced option and specify the driver location manually. (Normally at C:\Program Files\Digital Zoom Projector\Projector Flash Tool)

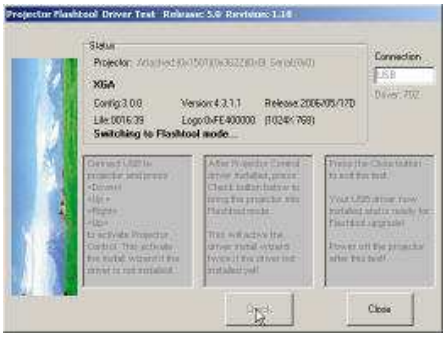
(Step 13) Windows updates the USB Projector Control driver when found.

(Step 14) Windows completed the new hardware wizard. Press the “Finish” to exit.

Note: In case you got USB enumeration problem, the USB no longer recognize your projector! Please clear

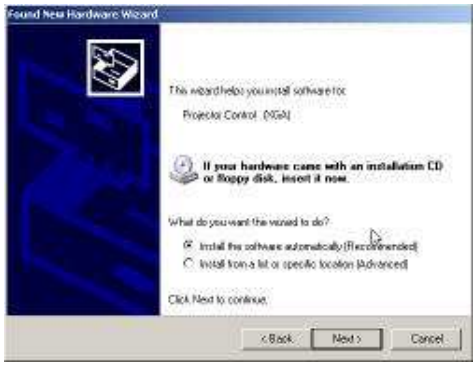


(Step 15) Once the Projector Control USB driver is enumerated, the projector information displayed in the status windows. Click on the <Check> button to place the projector in the Flashtool mode. The purpose of this function is to verify whether or not the project is successfully in the Flashtool mode.



(Step 16) The projector is switching to Flashtool mode after click the <Check>…

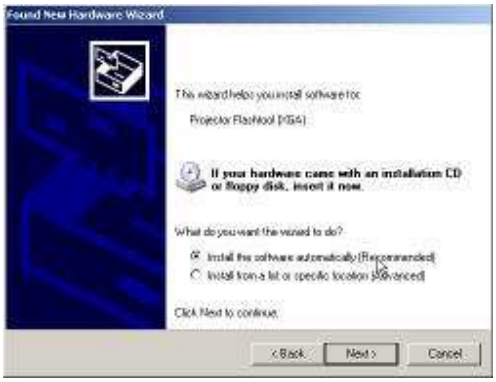
(Step 17) The Windows New Hardware Wizard will launch again for the second USB Projector Control. (Select “No, not this time”, Click on the “Next” button to continue)



(Step 18) Select “Install the software automatically” and Click on the “Next” button to continue.
In case the wizard cannot find the driver (the ProjectorControl.inf), please select the other advanced option and specify the driver location manually.
(Normally at C:\Program Files\Digital Zoom Projector\Projector Flash Tool)

(Step 19) Windows updates the USB Projector Control driver when found.

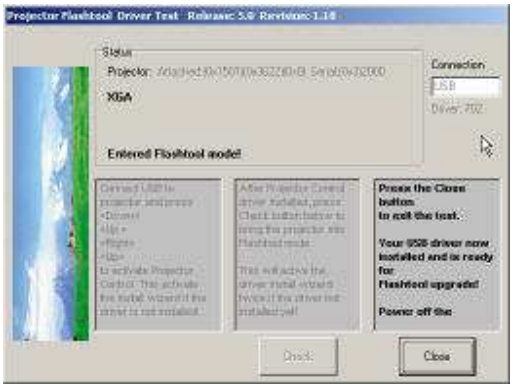
(Step 20) The New Hardware Wizard launches and Windows detects a new USB device attached.
Select “No, not this time”.
Click on the “Next” button to continue.



(Step 21) Select “Install the software automatically”.
Click on the “Next” button to continue.
In case the wizard cannot find the driver (the ProjectorControl.inf), please select the other advanced option and specify the driver location manually.
(Normally at C:\Program Files\Digital Zoom Projector\Projector Flash Tool)

(Step 22) Windows updates the USB Projector Control driver when found.

(Step 23) Windows completes the new hardware wizard. Press the “Finish” button to exit.



(Step 24) Congratulations! Power off the projector now. Your driver has been checked and works for Flash-tool.

Appendix-A

How to clear the USB enumeration registry?

Run “regedit” and select the following items **HKEY_LOCAL_MACHINE->SYSTEM->CurrentControlSet->Enum->USB->**

The E400/AV/DP2601 **VID_1501&Pid_2601xxx**

The AV/DP2618 series **VID_1501&Pid_2618xxx**

The AV/DP3618 series **VID_1501&Pid_3618xxx**

The DP3602 series **VID_1501&Pid_3602xxx**

The DP3616 series **VID_1501&Pid_3616xxx**

The DP3622 series **VID_1501&Pid_3622xxx**

The PR301x series **VID_1501&Pid_2617xxx**

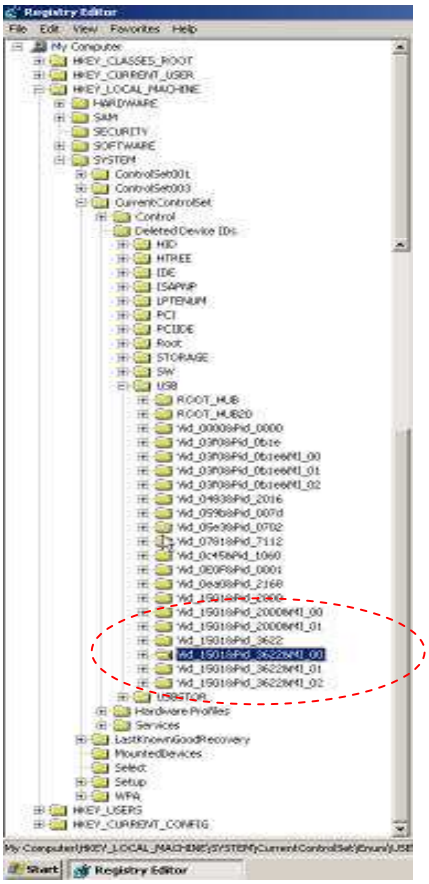
The PR302x series **VID_1501&Pid_3617xxx**

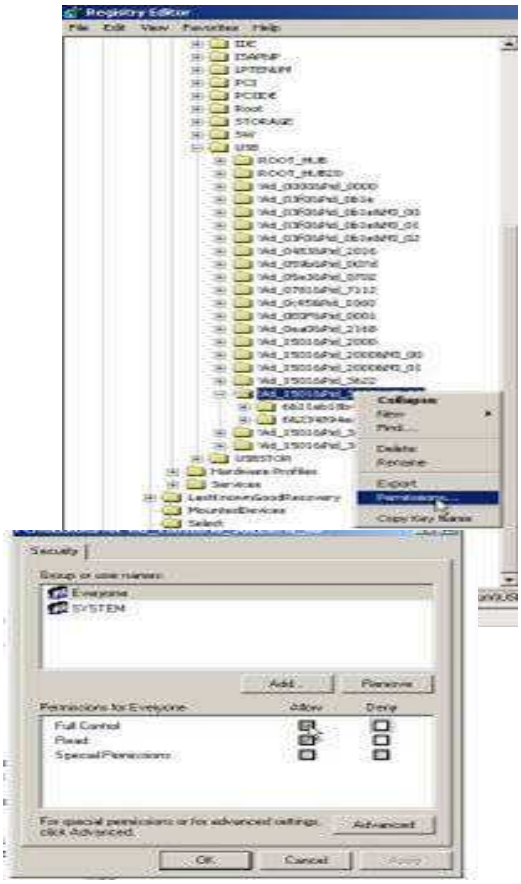
The PR50xx series **VID_1501&Pid_3622xxx**

The EP77x series **VID_1501&Pid_3622xxx**

The DDP2230/243X series **VID_1501&Pid_2230xxx**

Press <Delete> and remove these registries. (You need the read/write privilege of the Windows registry to delete it. Select the item and click right mouse will lead you to the Permissions dialog for applying the security options)

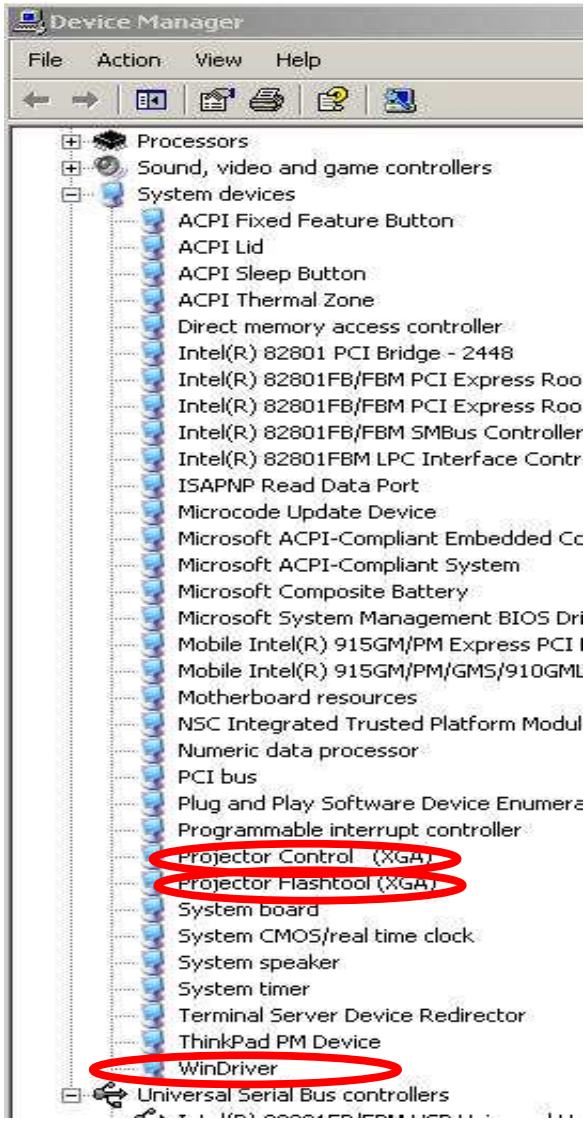




Appendix-B

Projector USB status on Windows Device Manager

1. The USB HID device will be installed automatically via Windows' USB hot-plug mechanism.
2. The Projector Control will be dynamically installed after entering the maintenance mode (Hit key sequence as <down>, <up>, <right>, <up>)
3. The Projector Flash-tool will be dynamically installed when starting the flash upgrading by Flash-tool or Flash-tool BL utility.
4. The Win-driver is the root driver for both Projector Control and Flash-tool.



5-2. DLP Projector Flash-Tool (Firmware) User Guide

The document is to describe the Windows application software "**Flash-Tool**" for projector firmware. Its main purpose is to provide a detailed procedure of upgrading the application software of a DLP projector.

The system requirement and the installation procedure of "**Flash-Tool"** are also included in the document.

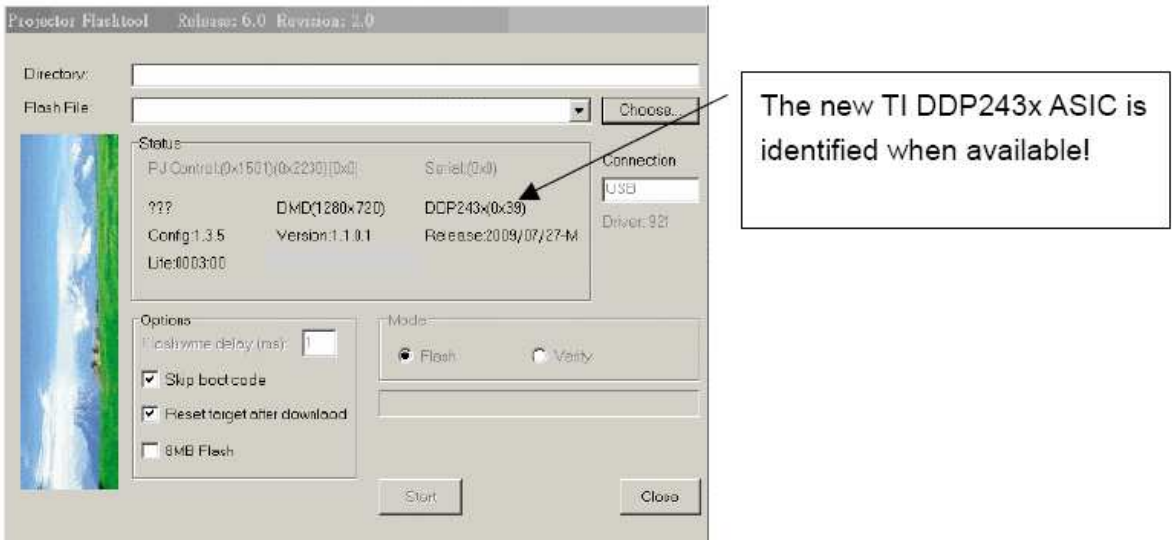
Note:
The user must have administrative privileges on the target computer in order to install your driver.
The installation target directory must not write protected.
User also required having the basic knowledge of Windows application installation.
Attention: This utility is for DLP™ DDP2000/2230/243X series projector only.

System Requirement of Flash Tool

1. IBM compatible PC.
2. Windows XP operating system (English).
3. Projector Flash-tool USB driver installed.

New features of this release

The latest TI DLP ASIC DDP243X are supported, with EON 4M/8M and Macronix 4M flash ROM.



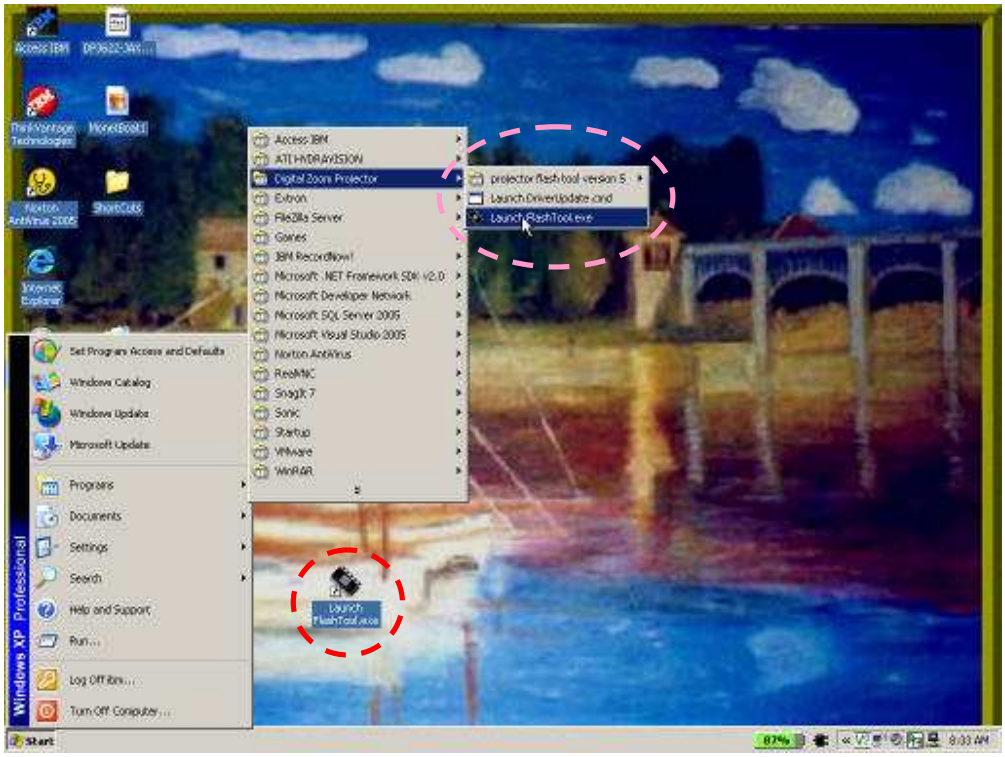
Install Flash-Tool to PC

Execute the file of "**Digital Zoom Projector Flash Tool V6.0.2.msi**" or above version.

Note: If your projector USB driver is not installed yet, please refer to the USB driver installation guide for further details.

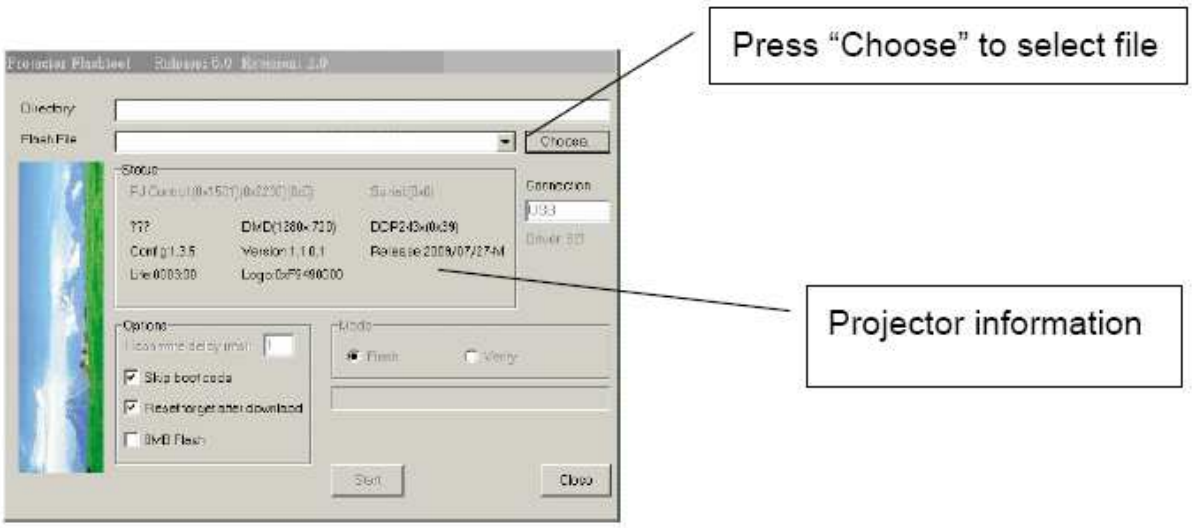
Flash-Tool User's Guide (Upgrading Projector Firmware)

Step 1: Launch the "FlashTool.exe" from installed short-cut at **Program > Digital Zoom Projector> Launch FlasTool.exe** or click on the "Launch FlashTool.exe" shortcut icon on the desktop.



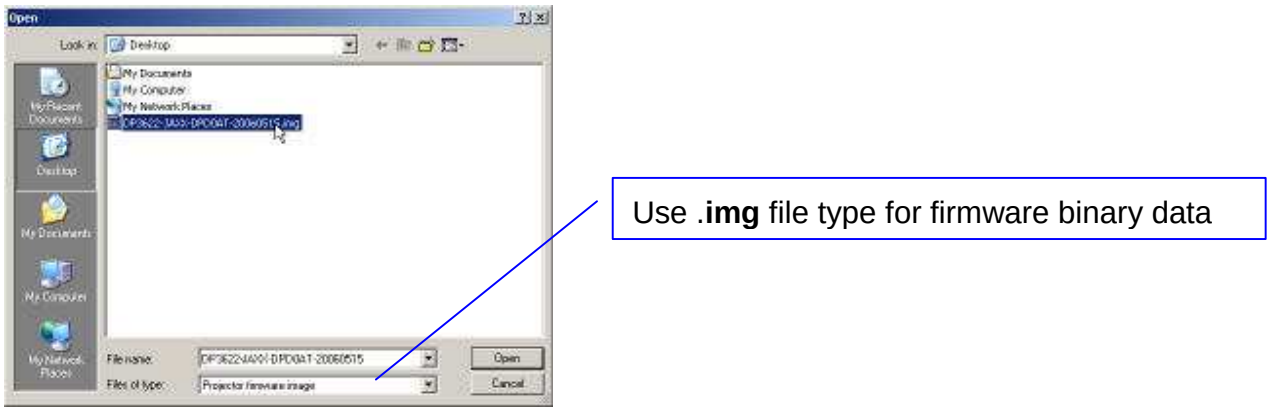
Step 2: While executed, a Flash-Tool window shall appear as the following picture.

Step 3: The System will be not under 1W condition before you programming flash updated.
Projector is in STAND BY mode.
Make sure the USB cable is firmly attached between projector and computer.
Press holds the <Left> keys and connects the power cord to the projector at same time,
The LAMP LED (Red) will blink one time and please make sure the system is not under 1W stay.
Press <Down>, <Up>, <Right>, <Up> keys in sequence using keypad buttons, or using the IR remote controller for those with limited keypads.
The lamp LED (Red) will blink one time and the Flash-Tool mode will be enabled.

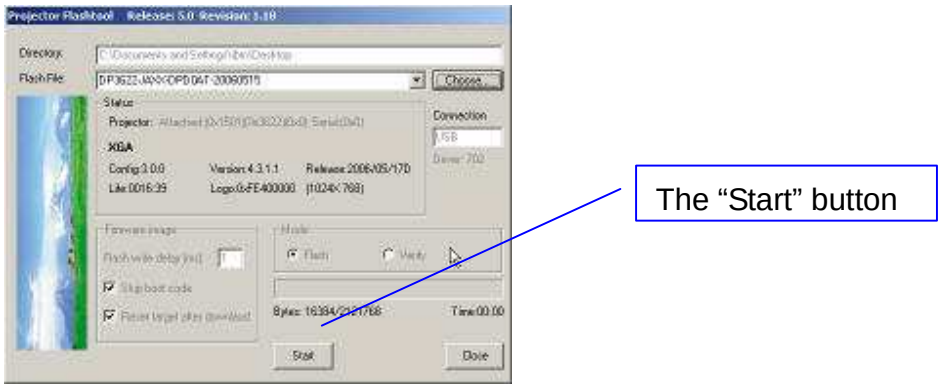


Note:
The Windows hardware wizard will pop up if the USB device driver is not installed.
Simply select the recommended options, and let Windows Wizard does the trick.

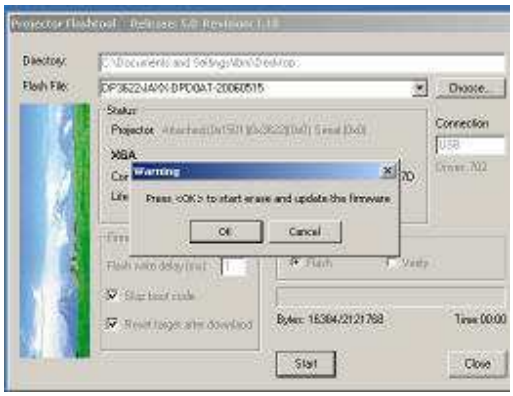
Step 4: Press “Choose” button to locate the new firmware which can be downloaded from website (For example: DP-3622 JAXX-DPD0A.img). Select the desired *.img file by either double clicking the file or pressing the “Open” button to load the file.



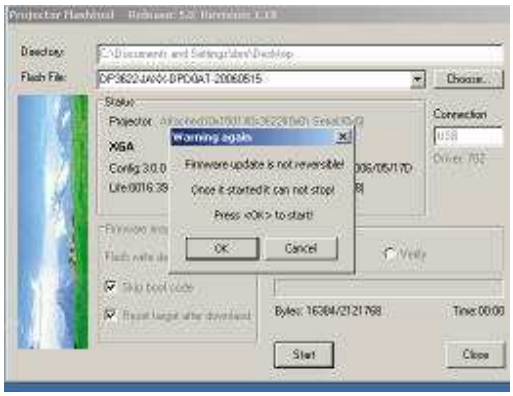
Step 5: The Flash-Tool will validate the signature of the binary image file for upgrading.
The “Start” button will not enable if the binary image is not a valid projector firmware.



Step 6: Press the “Start” button to update the flash with the chosen firmware.
A warning message box will appear for confirmation. Press <OK> to continue.



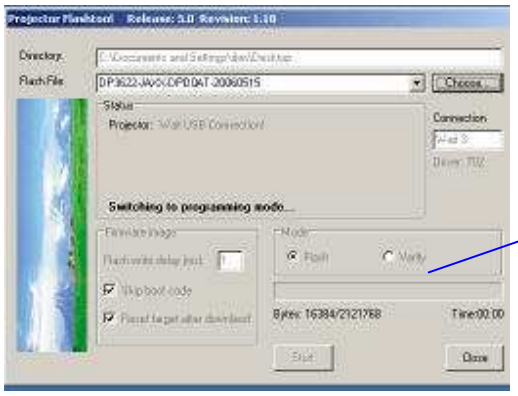
Step 7: The last warning message box appears, this is the last chance to stop the update.
Press “OK” button to start the firmware update.



Caution:

DO NOT install any USB driver when erasing or upgrading process started.

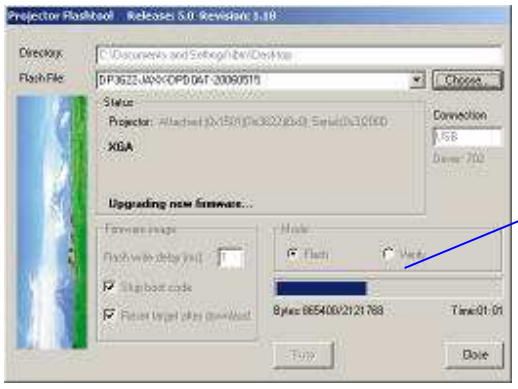
Step 8: According to the Flash technology, the old firmware will be erased first. Therefore, Flash-Tool will automatically erase the old firmware before upgrading.



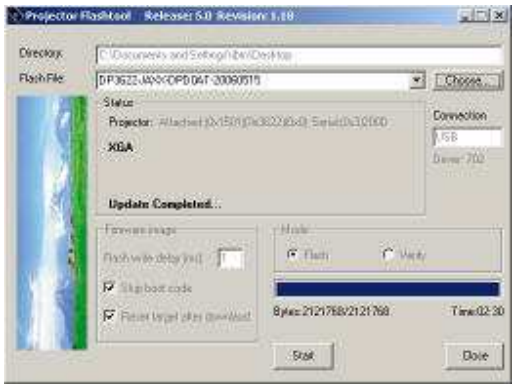
Erasing status

Caution:
DO NOT install any USB driver when erasing or upgrading process started.

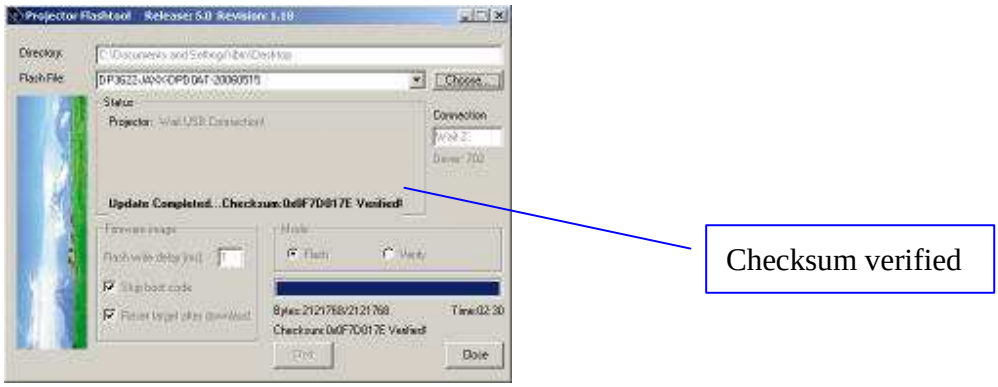
Step 9: After old firmware erased, the new firmware upgrading process will start.



Upgrading new firmware



Step 10: After the new firmware upgraded, the Flash-Tool will perform the final validation. The dialog showed checksum with verification message!



Step 11: Done! Please Power on the projector.

5-3. DLP Projector Flash-Tool (splash logo) User Guide

The document is to describe Windows application software "**Flash-Tool**" for projector splash logo. Its main purpose is to provide a detailed procedure for changing the splash logo of the DLP projector. The system requirement and the installation procedure of "**Flash-Tool"** are also included in the document.

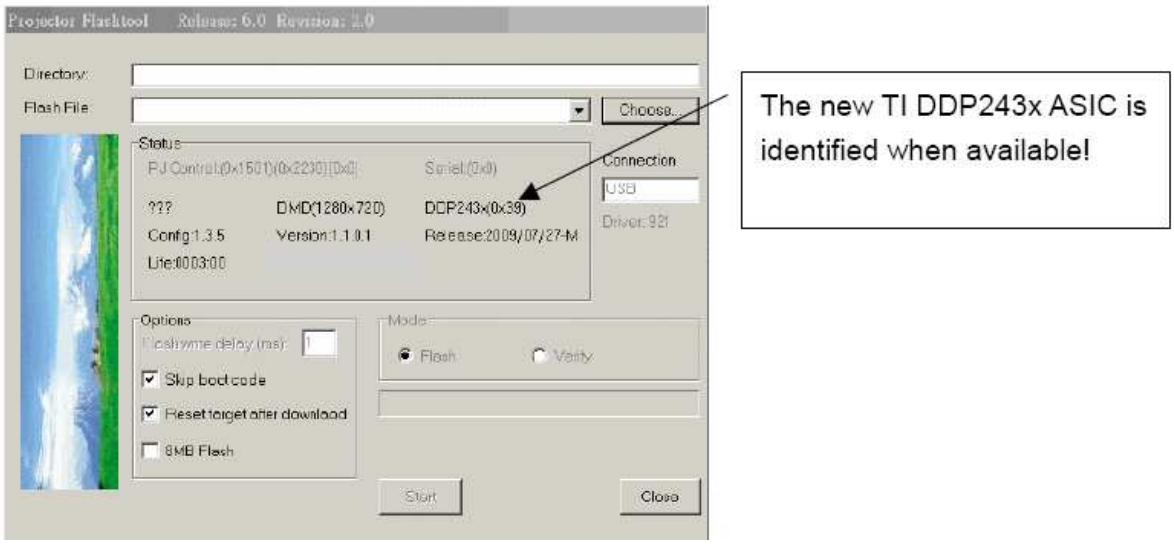
Note:
The user must have administrative privileges on the target computer in order to install your driver.
The installation target directory must not write protected.
User also required having the basic knowledge of Windows application installation.
Attention: This utility is for DLP™ DDP2000/3020/2230/243X series projector only.

System Requirement

1. IBM compatible PC.
2. Windows XP operating system (English).
3. Projector Flashtool USB driver installed.

New features of this release

The latest TI DLP ASIC DDP243X are supported, with EON 4M/8M and Macronix 4M flash ROM.



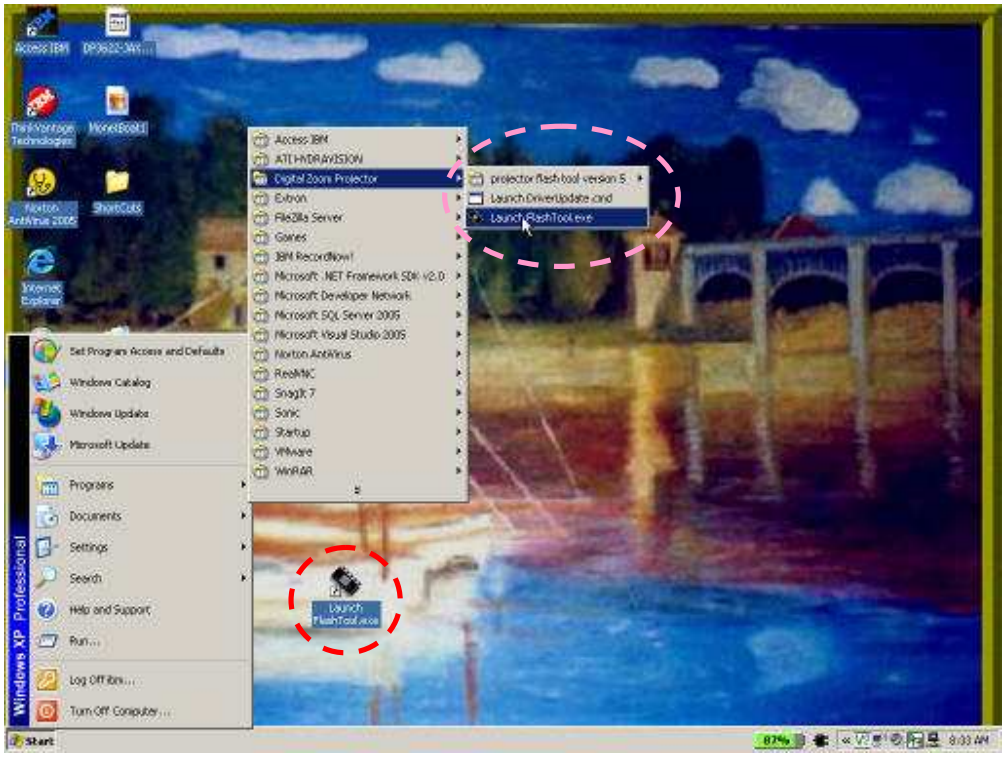
Install Flash-Tool to PC

Run the "**Digital Zoom Projector Flash Tool V6.0.2.msi**" or above version

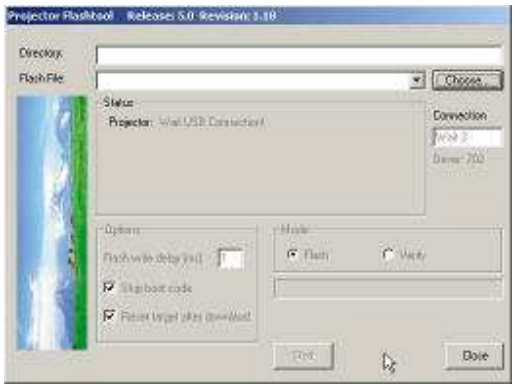
Note: If your projector USB driver is not installed yet, please refer to the USB driver installation guide for further details.

Flash-Tool User's Guide (Upgrading Projector Logo)

Step 1: Launch the "FlashTool.exe" from installed short-cut at **Program > Digital Zoom Projector> Launch FlasTool.exe** or click the "Launch FlashTool.exe" shortcut icon on the desktop.



Step 2: While executed, a Flash-Tool window shall appear as the following picture, if no projector is detected.



Step 3: The System will be not under 1W condition before you programming flash updated.

Projector is in STAND BY mode.

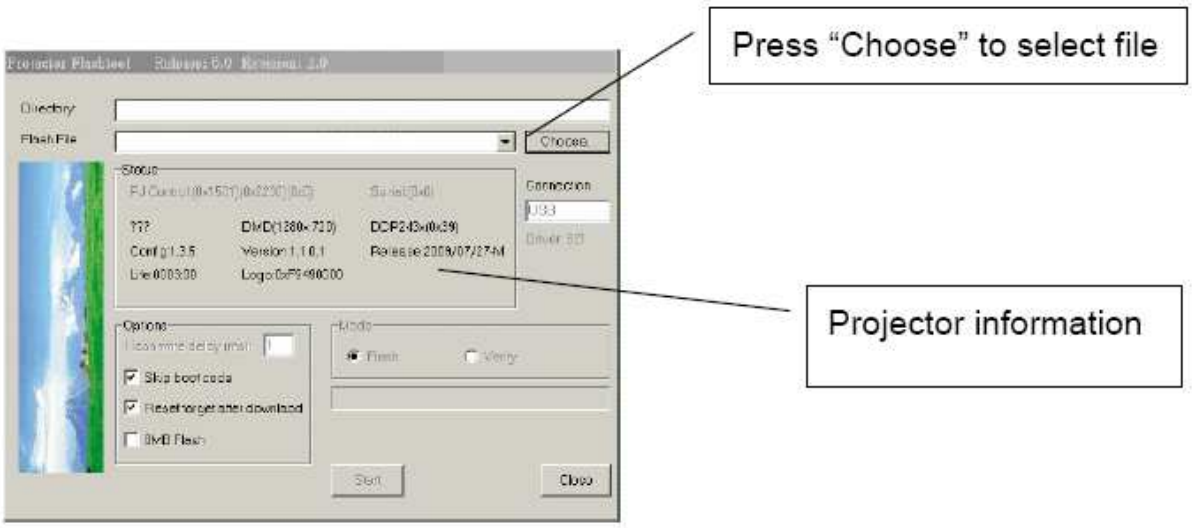
Make sure the USB cable is firmly attached between projector and computer.

Press holds the <Left> keys and connects the power cord to the projector at same time,

The LAMP LED (Red) will blink one time and please make sure the system is not under 1W stay.

Press <Down>, <Up>, <Right>, <Up> keys in sequence using keypad buttons, or using the IR remote controller for those with limited keypads.

The lamp LED (Red) will blink one time and the Flash-Tool mode will be enabled.



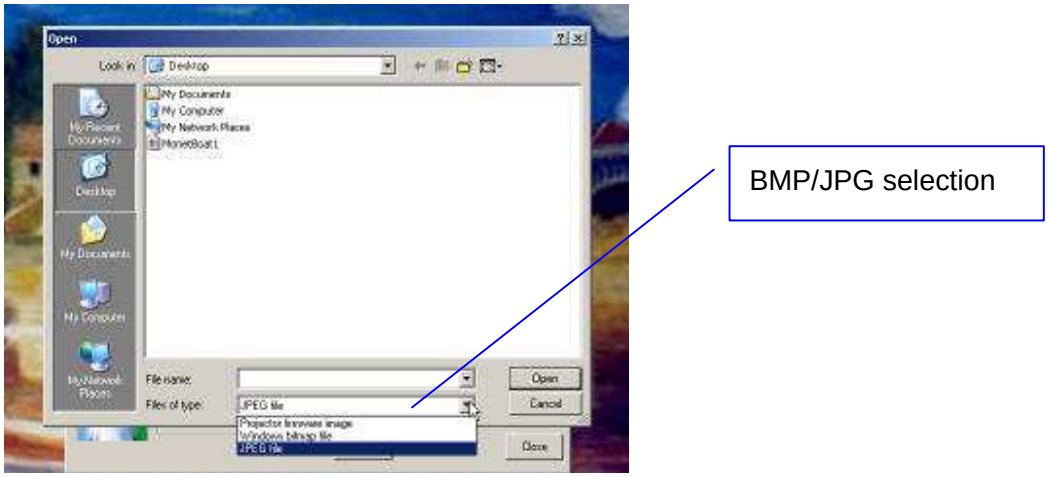
Note:

The Windows hardware wizard will pop up if the USB device driver is not installed.

Simply select the recommended options, and let Windows Wizard does the trick.

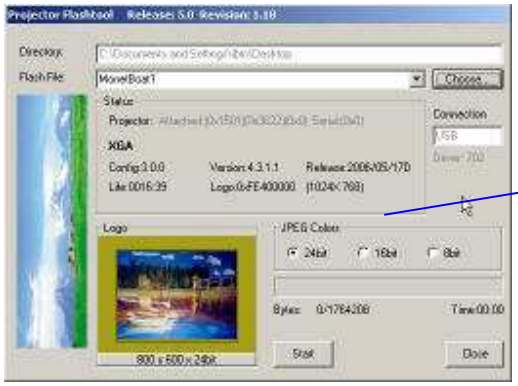
Step 4: Press the “Choose” button to locate the new splash logo.

Select the image type in either BMP or JPG in the “File of type” option.



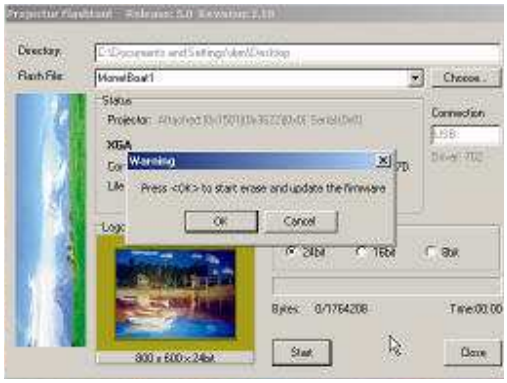
Step 5: Double click the desire logo file or press the “open” button to load the file.

Step 6: The Flash-Tool will validate the size of the logo file, which will be converted to RLE format and stored to the projector’s flash memory.
The compressed RLE size cannot exceed the flash memory limitation; otherwise, try to reduce the colors by selecting the JPEG colors option in the tool. (For JPEG files only)



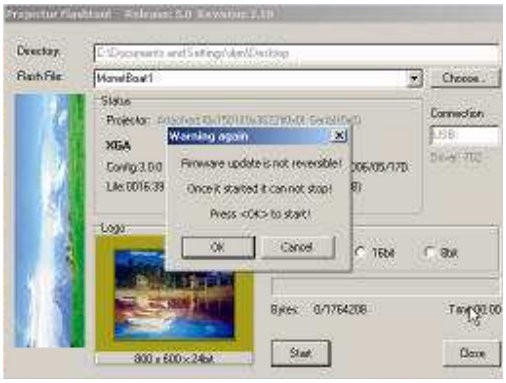
JPEG color selection for reducing the splash logo size!

Step 7: Press the “Start” button to update the flash with the chosen firmware.
A warning message box will appear for confirmation. Press <OK> to continue.



Step 8: When the last warning message box appears, this is the last chance to stop the update.

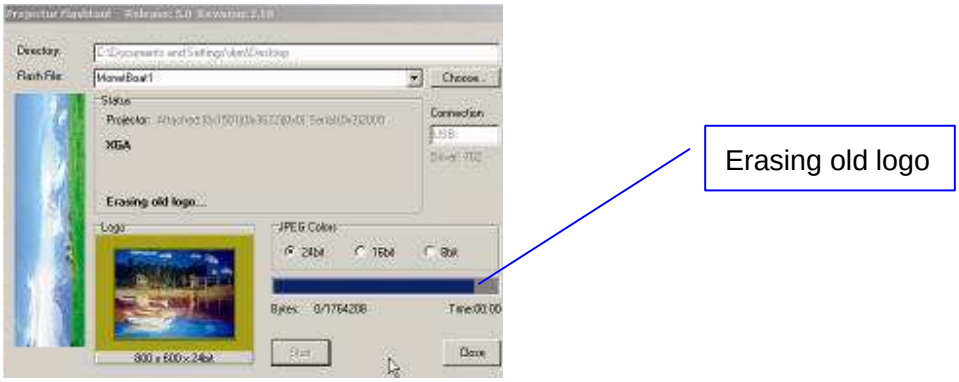
Press “OK” button to start the firmware update.



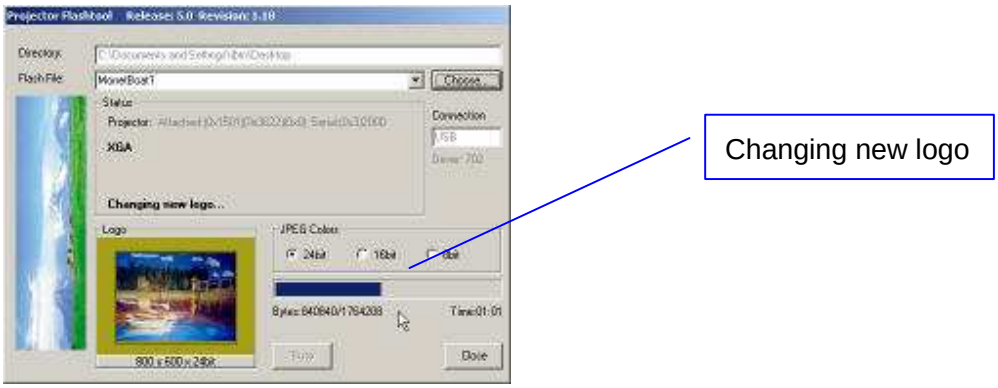
Caution:

DO NOT install any USB driver when erasing or upgrading process started.

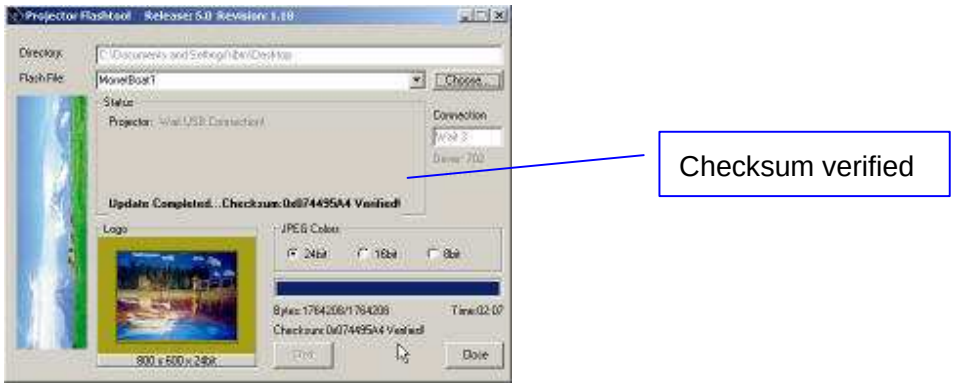
Step 9: According to the Flash-ROM technology, Flash-Tool needs to erase the old splash logo before adding the new one.



Step 10: After old logo erased, the new logo upgrading process will start.



Step 11: After the new logo is changed, the Flash-Tool will perform the final validation. The dialog shows the checksum with a verification message!



Step 12: Done! Please power on the projector.

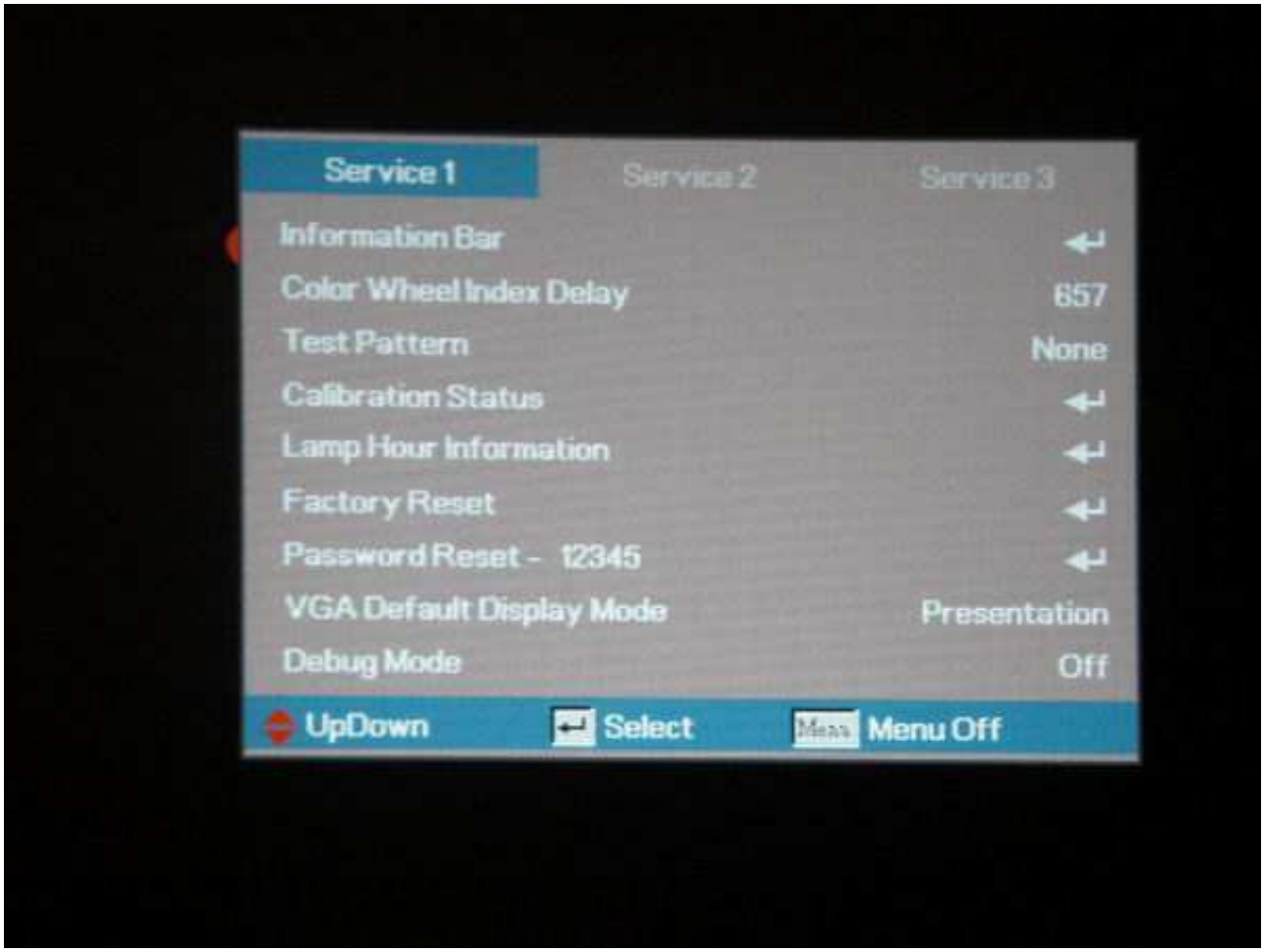
6. ADC Calibration

Step of into Service Mode

Step 1 : To turn on the projector, then press “Power” key => “Left” key => “Right” key => “Down” key => “Up” key.

Step 2：If password is correct then go into Service Mode.

Then SERVICE OSD will pop up shows as follows:



6-1. Calibrate Analog RGB (1024 x 768 @ 60Hz):

A. Function Description:

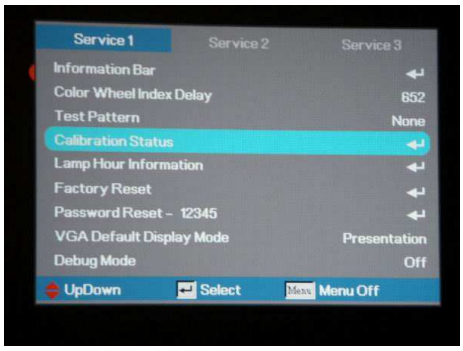
ADC Calibration - VGA ：Calibrating Analog RGB signal

ADC Calibration – YUV ：Calibrating YUV signal

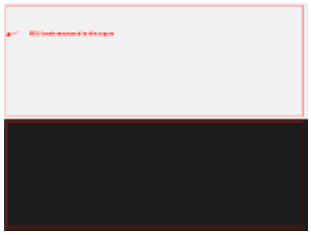
Calibration Status ：Status of VGA and YUV calibrated value

B. Calibrate Analog RGB (1024 x 768 @ 60Hz XGA):

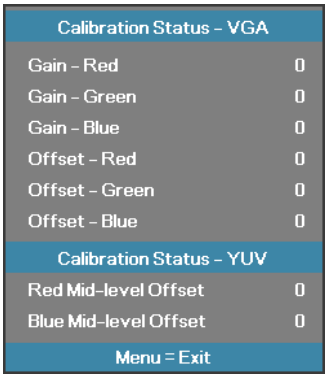
Step 1： In SERVICE 1Mode select ADC Calibration – VGA, In this menu input pattern with White(240,240,240) and Black(16,16,16) for calibrate VGA Source . After input ready press “Enter” key to calibration.



Input Pattern



After input ready press “**Enter**” key on Calibration item to calibration.



Step 2 : After complete the OSD will show the picture as follow , if not complete, just close the OSD.

Note : Offset & Gain Value

	Default	After ADC
Offset	**511**	
Gain	**511**	

Step 3 : Compare internal white pattern and RGB source white pattern, if the brightness gap ratio of these two source is bigger than 3.5%.

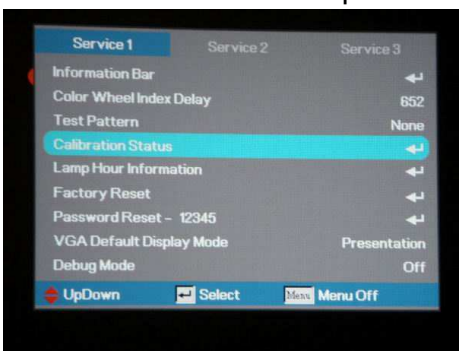
6-2. Calibrate Analog YpbPr:

A. Function Description：

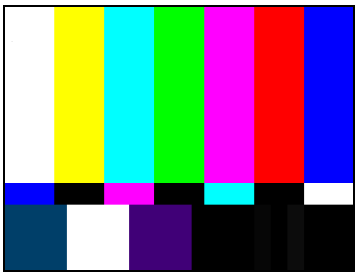
ADC Calibration - Component : Calibration YPbPr signal

B. Calibrate YPbPr (480i @60Hz):

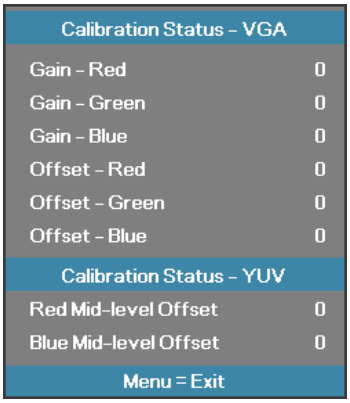
Step 1：In SERVICE 1Mode select ADC Calibration – Ypbpr, In this menu input pattern with 75% SMPTE pattern for calibration Component.



Input Pattern



After input ready press “**Enter**” key on Calibration item to calibration.



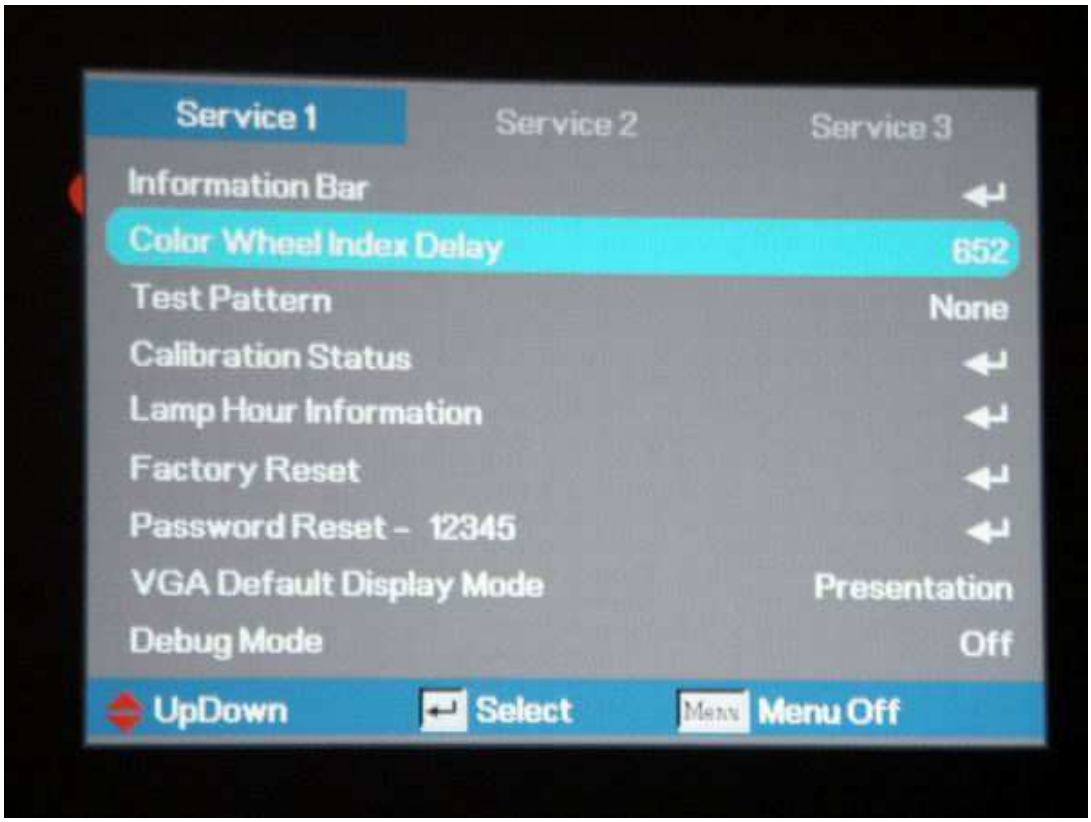
NOTE： You can select Calibration Status – VGA or Calibration Status – YUV item to watch the calibrated value at any time.

6-3. Color Wheel Index, DMD Contrast and Brightness Adjustment @ RGB source

A. Switch Timing to RGB (1024 x 768 @ 60Hz)

B. Then go into Service Mode.

In the Service Mode.

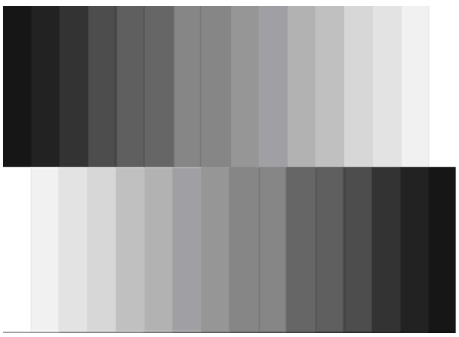


C. Select “CW Index”.

The default value is 654. The range is 0~719

D. Switch Pattern 49 “256 Gray Scale”. Fine-tune until the gray scale still distinct.

Decrease the color to the minimum, tune off G, B channel, check the smooth in brighter level of the R 256 ramp. If not, fine tune “CW Index delay time” until R 256 ramp smooth.

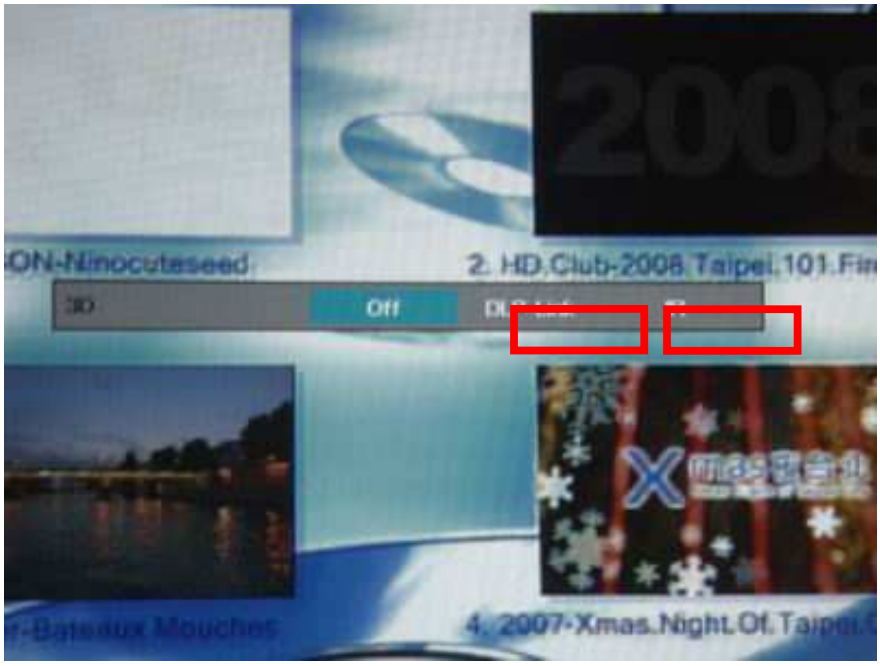


7. 3D Function

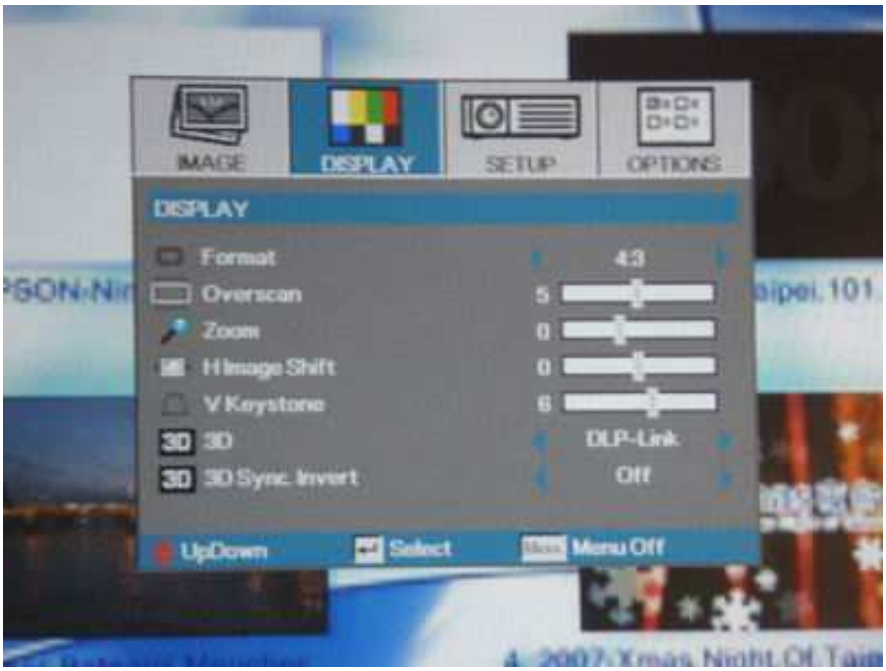
Step 1. Please make sure connect an input signal to the projector when you want to use the 3D function

Step 2. Press the **“MENU”** button, select **“DISPLAY”**, then press **“▼”** button to select **“3D”**

Step 3. Press **"◄"** or **"►"** on the keypad to select different 3D functions, **"DLP-Link"** or **"IR".**



Step 4. Once select, press the "ENTER" button on the keypad, as below displays.



8. Projector LAMP

The projector automatically detects the lamp life. When the lamp life is nearing the end of use, you will receive a warning message.

When you see this message, please connect your local reseller or service center to change the lamp as soon as possible. Make sure the projector has been cooled down for at least 30 minutes before change the lamp.

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

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

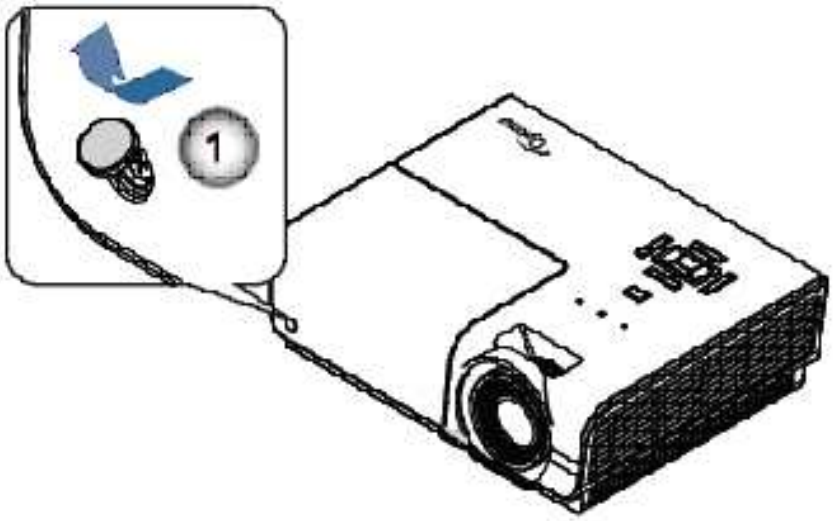
Replacing the LAMP

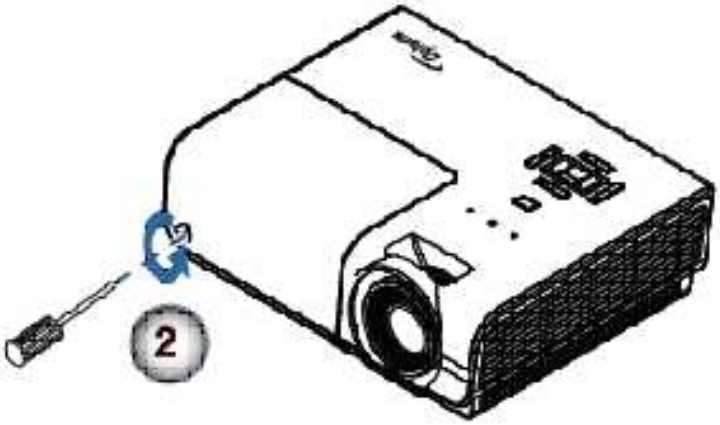
The projection lamp should be replaced when it burns out. It should only be replaced with a certified replacement part, which you can order from your local dealer.

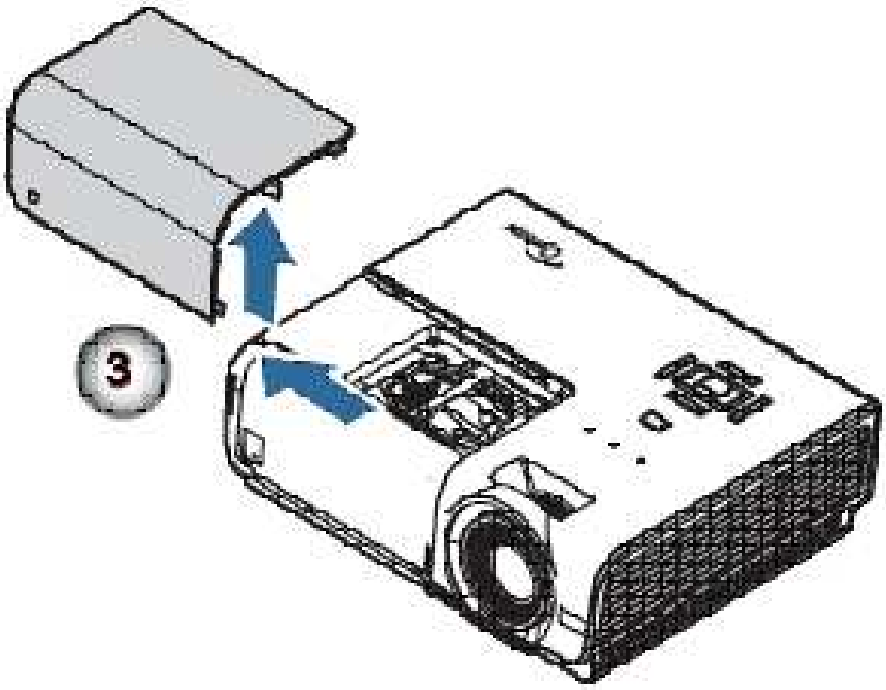
Important:

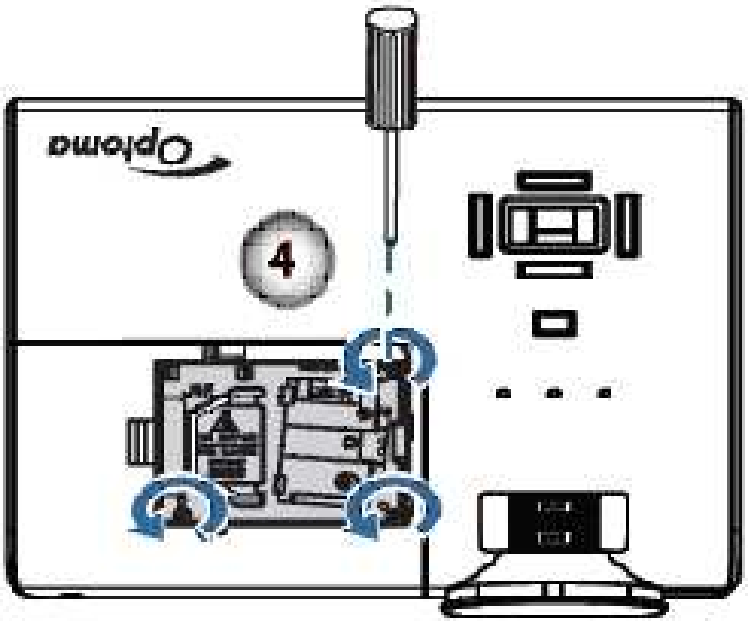
The lamp contains a certain amount of mercury and should be disposed of according to local ordinance regulations.

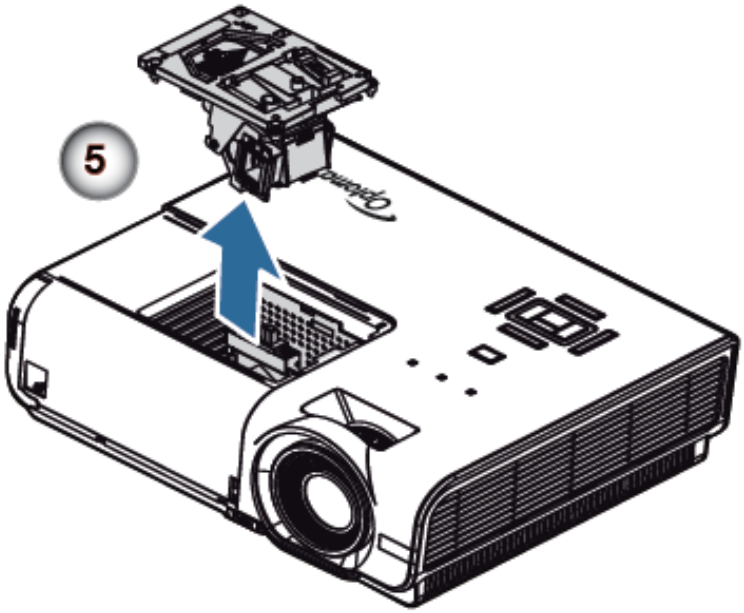
Avoid touching the glass surface of the new lamp, doing so may shorten its operation life.






3


Optoma
4



1. Switch off the power to the projector by pressing the power button.
2. Allow the projector to cool down at least 30 minutes.
3. Disconnect the power cord.
4. Open the screw cover.
5. Remove the single screw on the lamp compartment cover.
6. Remove the lamp compartment cover.
7. Remove the three screws from the lamp module.
Lift the module handle up
8. Pull firmly on the module handle to remove the lamp module.

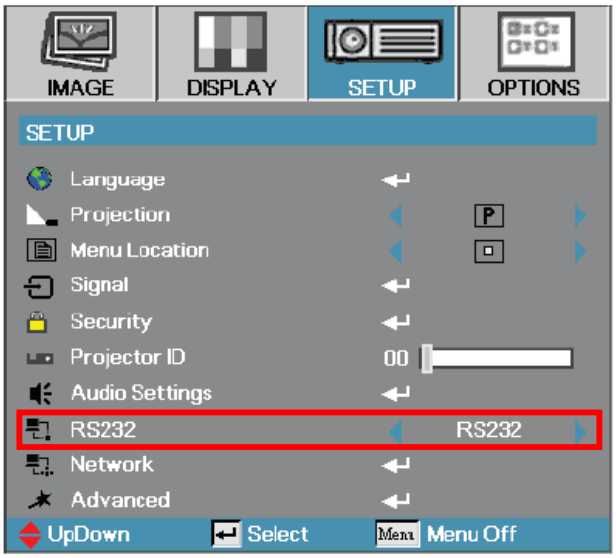
To replace the lamp module, reverse the previous steps. While installing, align the lamp module with the connector and ensure it is level to avoid damage.

9. Turn on the projector and do “Lamp Reset ” after the lamp module is replaced.

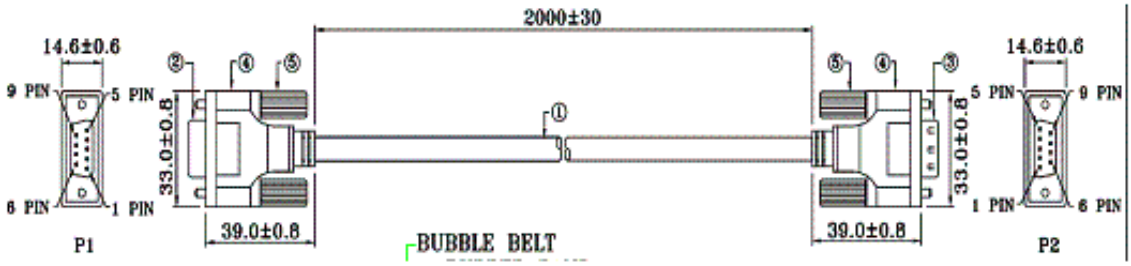
9. How to program by RS232

9-1. OSD Setting

Press the **“menu”** key on the keypad or by remote control, select **“SETUP”->“ RS232 ”,** then press the **“►”** key on the keypad to select **“RS232”.**



9-2. RS-232 HARDWARE CONNECTION



WIRE ARRANGEMENT		
P1	COLOR	P2
1	BLACK	1
2	BROWN	3
3	RED	2
4	ORANGE	4
5	YELLOW	5
6	GREEN	6
7	BLUE	7
8	PURPLE	8
9	GRAY	9
CASE	DRAIN WIRE	CASE

PC RS-232 pin alignment

Pin	Description	Pin	Description
1	NC	2	RXD
3	TXD	4	NC
5	GND	6	NC
7	RTS	8	CTS
9	NC		

9-3. RS232 Code

RS232 Protocol Function List

RS232 Commands

Baud Rate	9600
Data Bits	8
Parity Check	None
Stop Bits	1
Flow Control	None
UART16550 FIFO	Disable

Lead Code	Projector ID		Command ID			space	variable	carriage return
~	X	X	X	X	X		n	CR
Fix code One Digit	Set in OSD 00~99 Two Digit 00 is for universal use		Defined by Optoma 2 or 3 Digit See the Follow content			One Digit	Per item Definition	Fix code One Digit

Item	Key Definition		ASCII	Pass	Fail
1	Power	n=1	~XX140 n	P	F
2	Laser	N/A			
3	Remote Mouse Up	n=3		P	F
4	Remote Mouse Left	n=4		P	F
5	Remote Mouse Enter	n=5		P	F
6	Remote Mouse Right	n=6		P	F
7	Remote Mouse Down	n=7		P	F
8	Mouse Left Click	n=8		P	F
9	Mouse Right Click	n=9		P	F
10	Up/Page +	n=10		P	F
11	Left/Source	n=11		P	F
12	Enter (for projection MENU)	n=12		P	F
13	Right/Re-SYNC	n=13		P	F
14	Down/Page -	n=14		P	F
15	Keystone +	n=15		P	F
16	Keystone -	n=16		P	F
17	Volume -	n=17		P	F
18	Volume +	n=18		P	F
19	DVI-D/YPbPr/1	n=19		P	F
20	Menu/2	n=20		P	F
21	Zoom/3	n=21		P	F
22	HDMI	n=22		P	F
23	Freeze/5	n=23		P	F
24	AV Mute/6	n=24		P	F
25	S-Video/7	n=25		P	F
26	VGA/8	n=26		P	F
27	Video/9	n=27		P	F

Keypad Command

Function			ASCII	Pass	Fail
Power	On/Off	n=1/n=2 & 0	~XX00 n	P	F
Power On with Password			~XX00 1nnnnn	P	F
Re-sync		n=1	~XX01 n	P	F
AV Mute	On/Off	n=1/n=2 & 0	~XX02 n	P	F
Mute	On/Off	n=1/n=2 & 0	~XX03 n	P	F
Freeze		n=1	~XX04 n	P	F
UnFreeze		n=2 & o	~XX04 n	P	F
HDMI		n=1	~XX12 n		
DVI-D		n=2			
VGA 1		n=5			
VGA 2		n=6			
VGA 1 SCART		n=7			
VGA 1 Component		n=8			
S-Video		n=9			
Video		n=10			
VGA 2 Component		n=13			

OSD/Image

Function				ASCII	Pass	Fail
Display Mode	Presentation		n=1	~XX20 n	P	F
	Bright		n=2			
	Movie		n=3			
	sRGB		n=4			
	Classroom		n=7			
	Blackboard		n=8			
	User		n=5			
	3D		n=11			
Brightness			n= -50 - +50	~XX21 n	P	F
Contrast			n= -50 - +50	~XX22 n	P	F
Sharpness			n= -15 - +15	~XX23 n	P	F
Saturation			n= -50 - +50	~XX45 n	P	F
Tint			n= -50 - +50	~XX44 n	P	F
IMAGE /Advanced	BrilliantColor™		n= 0 - 10	~XX34 n	P	F
	Degamma	Film	n=1	~XX35 n	P	F
		Video	n=2			
		Graphics	n=3			
		PC	n=4			
	Color Temp.	Warm	n=1	~XX36 n	P	F
		Medium	n=2			
		Cold	n=3			

Function				ASCII	Pass	Fail
IMAGE /Advanced	Color Settings	Red Gain	n=-50 ~ 50	~XX24 n	P	F
		Green Gain	n=-50 ~ 50	~XX25 n	P	F
		Blue Gain	n=-50 ~ 50	~XX26 n	P	F
		Red Bias	n=-50 ~ 50	~XX27 n	P	F
		Green Bias	n=-50 ~ 50	~XX28 n	P	F
		Blue Bias	n=-50 ~ 50	~XX29 n	P	F
		Cyan	n=-50 ~ 50	~XX30 n	P	F
		Yellow	n=	~XX31 n	P	F
		Magenta	n=	~XX32 n	P	F
		Reset	n=1	~XX33 n	P	F
	Color Space	Auto	n=1	~XX37 n	P	F
		RGB	n=2			
		YUV	n=3			
IMAGE /Advanced	Input Source Filters	HDMI	n=1	~XX39 n	P	F
		DVI-D	n=2			
		VGA 1	n=5			
		VGA 2	n=6			
		S-Video	n=9			
		Video	n=10			
IMAGE /Advanced	De-Interlace	On	n=1	~XX40 n	P	F
		Off	n=2 & 0			

OSD/Display

Function			ASCII	Pass	Fail
Format	4:3	n=1	~XX60 n	P	F
	16:9 I	n=2			
	16:9 II	n=3			
	Native	n=6			
	Auto	n=7			
Overscan		n=0-10	~XX61 n	P	F
Zoom		n= -30 - +50	~XX62 n	P	F
H Image Shift		n= -50 - +50	~XX63 n	P	F
V Image Shift (16:9)		n= -24 - +24	~XX64 n	P	F
V Keystone		n= -30 - +30	~XX66 n	P	F
3D mode	Off	n = 1	~XX230 n		
	DLP Link	n = 2			
	IR	n =3			
3D sync invert	Off/ON	n=2 & 0	~XX231 n		

OSD/Setup

Function				ASCII	Pass	Fail
Language	English		n=1	~XX70 n	P	F
	German		n=2			
	French		n=3			
	Italian		n=4			
	Spanish		n=5			
	Portuguese		n=6			
	Polish		n=7			
	Dutch		n=8			
	Swedish		n=9			
	Norwegian/Danish		n=10			
	Finnish		n=11			
	Greek		n=12			
	Traditional Chinese		n=13			
	Simplified Chinese		n=14			
	Japanese		n=15			
	Korean		n=16			
	Russian		n=17			
	Hungarian		n=18			
	Czechoslovak		n=19			
	Arabic		n=20			
	Thai		n=21			
	Turkish		n=22			
Projection	Front-Desktop		n=1	~XX71 n	P	F
	Rear-Desktop		n=2			
	Front-Ceiling		n=3			
	Rear-Ceiling		n=4			
Menu Location	Top Left		n=1	~XX72 n	P	F
	Top Right		n=2			
	Centre		n=3			
	Bottom Left		n=4			
	Bottom Right		n=5			
Signal	Automatic	Enable/Disable	n=1/n =0 &2	~XX91 n	P	F
	Frequency		n= 0~31	~XX73 n	P	F
	Phase		n= -5 - +5	~XX74 n	P	F
	H. Position		n= -5 - +5	~XX75 n	P	F
	V. Position		n= -5 - +5	~XX76 n	P	F
Security	Security Timer	Hour/Day/Month	nnnnnn	~XX77 n	P	F
	Change Password				send back the password to confirm	
	Security Settings	Enable/Disable	n=1/n=2 &0	~XX78 n	P	F

Function				ASCII	Pass	Fail
Projector ID			n=00-99	~XX79 n	P	F
Audio Settings	Mute	On/Off	n=1/n=2 &0	~XX80 n	P	F
	Volume		n=0-10	~XX81 n	P	F
	Mini-jack		n=1	~XX89 n	P	F
	RCA		n=2	~XX89 n	P	F
Advanced	Logo	Optoma/User	n=1/n=2	~XX82 n	P	F
	Logo Capture		n=1	~XX83 n	P	F
	Closed Captioning	On/Off	n=1/n=2 &0	~XX88 n	P	F
RS232		RS232	n=1	~XX86 n	P	F
		Network	n=2		P	F

OSD/Option

Function				ASCII	Pass	Fail
Source Lock		On/Off	n=1/n=2 &0	~XX100 n	P	F
High Altitude		On/Off	n=1/n=2 &0	~XX101 n	P	F
Information Hide		On/Off	n=1/n=2 &0	~XX102 n	P	F
Keypad Lock		On/Off	n=1/n=2 &0	~XX103 n	P	F
Background Color	Blue		n=1	~XX104 n	P	F
	Black		n=2			
	Red		n=3			
	Green		n=4			
	White		n=5			
Advanced	Direct Power On	On/Off	n=1/n=2 &0	~XX105 n	P	F
	Signal Power On	On/Off	n=1/n=2 &0	~XX113 n	P	F
	Auto Power Off (min)		n=0-180	~XX106 n	P	F
	Sleep Timer (min)		n=000-995	~XX107 n	P	F
	Power Mode(Standby)	Eco/Active	n=1/n=2 &0	~XX114 n	P	F
Lamp Setting	Lamp Hour		n=1	~XX108 n	nnnn	F
	Lamp Reminder	On/Off	n=1/n=2 &0	~XX109 n	P	F
	Brightness Mode	Bright/STD	n=1/n=2	~XX110 n	P	F
	Lamp Reset	Yes	n=1	~XX111 n	P	F
		No	n=2			
Reset		Yes	n=1	~XX112 n	P	F
		No	n=2			
12V Trigger		Off/On	n=2 &0/n=1	~XX192 n	P	F

Information Format: INFOa	Standby Mode	a=0
	Warming up	a=1
	Cooling Down	a=2
	Out of Range	a=3
	Lamp Fail	a=4
	Lamp Door Open Error / Thermal Switch Error	a=5
	Fan Lock	a=6
	Over Temperature	a=7
	Lamp Hours Running Out	a=8

Function	RS232 command	Response		
Information display	~XX150 1	Okabbbbccdddde		
		a = Power State	On	a=1
			Off	a=0
		b = Lamp Hour		bbbb
		c = Input Source	None	c=0
			HDMI	c=1
			DVI-D	c=2
			VGA 1	c=3
			VGA 2	c=4
			S-video	c=5
			Video	c=6
		d = Firmware Version		dddd
		e = Display mode	None	e=0
			Presentation	e=1
			Bright	e=2
			Movie	e=3
			sRGB	e=4
			Blackboard	e=5
			Classroom	e=6
			User	e=7
			3D	e=8
Input Source	~XX121 1	Oka	None	a=0
			HDMI	a=1
			DVI-D	a=2
			VGA 1	a=3
			VGA 2	a=4
			S-video	a=5
			Video	a=6
Software Version	~XX122 1	Okdddd		
Display Mode	~XX123 1	Oka	None	a=0
			Presentation	a=1

Function	RS232 command	Response		
			Bright	a=2
			Movie	a=3
			sRGB	a=4
			Blackboard	a=5
			Classroom	a=6
			3D	a=7
			User	a=8
Power State	~XX124 1	Oka	On	a=1
			Off	a=0
Brightness	~XX125 1	Oka		
Contrast	~XX126 1	Oka		
Aspect Ratio	~XX127 1	Oka	4:3	a=0
			16:9-I	a=1
			16:9-II	a=2
			Native	a=3
			Auto	a=4
Color Temperature	~XX128 1	Oka	Warm	a=0
			Medium	a=1
			Cold	a=2
Projection Mode	~XX129 1	Oka	Front-Desktop	a=0
			Rear-Desktop	a=1
			Front-Ceiling	a=2
			Rear-Ceiling	a=3
Model Name	~XX151 1	Oka	EX779	a=1
RS232 Version No	~XX152 1	Oka		

9-3. Hyper Terminal setting guide

9-3-1 Connect the RS232 Cable between your computer and Projector.

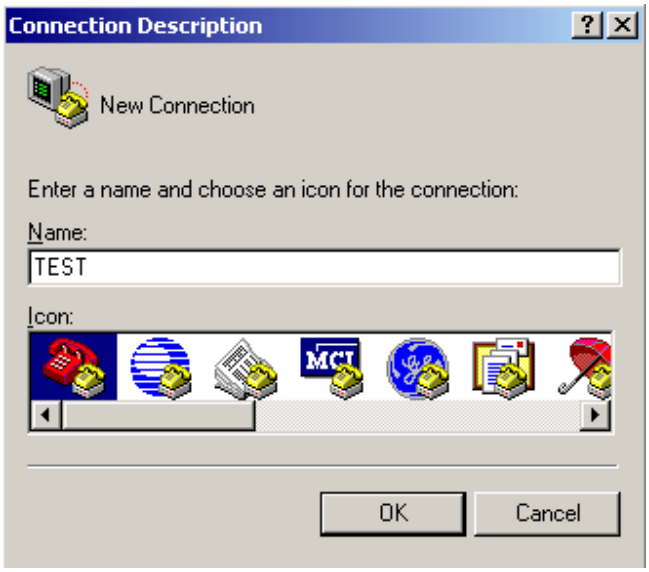
9-3-2 Open HyperTerminal

Window2000/XP HyperTerminal path：

Start \ Programs \ Accessories \ Communications \ HyperTerminal。

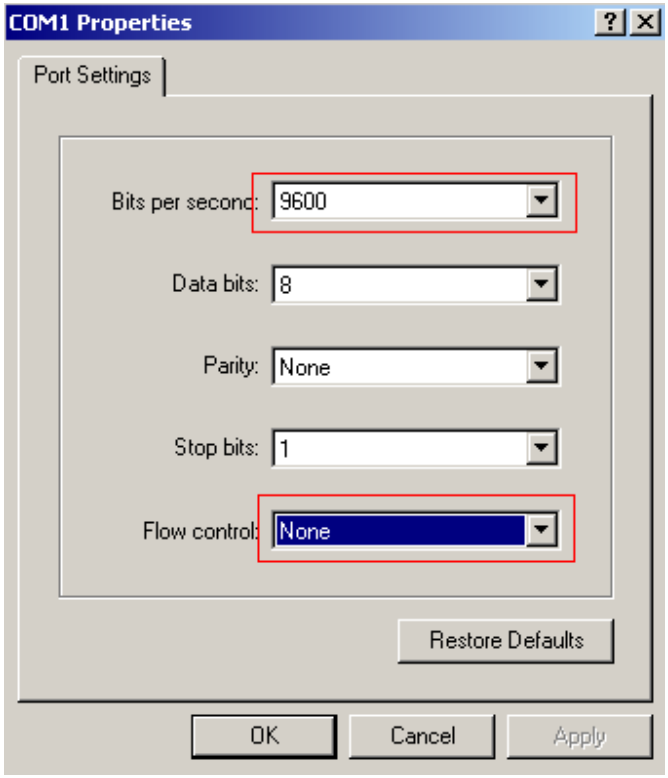
9-3-3 Setting the HyperTerminal parameter：

Step 1. Type the connection name .

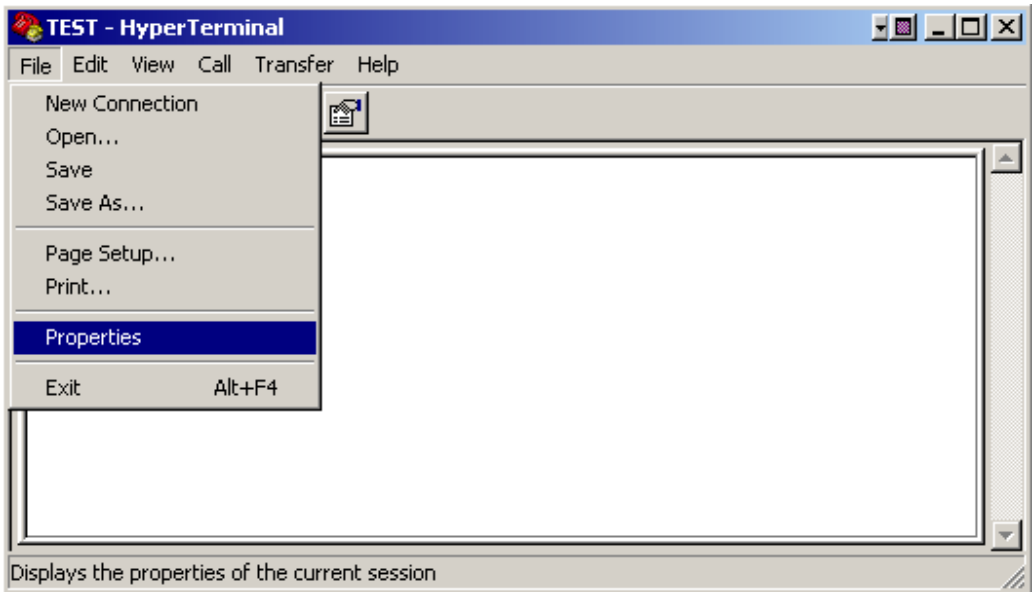


Step2. Choose the COM port for your RS232 Cable connected to.

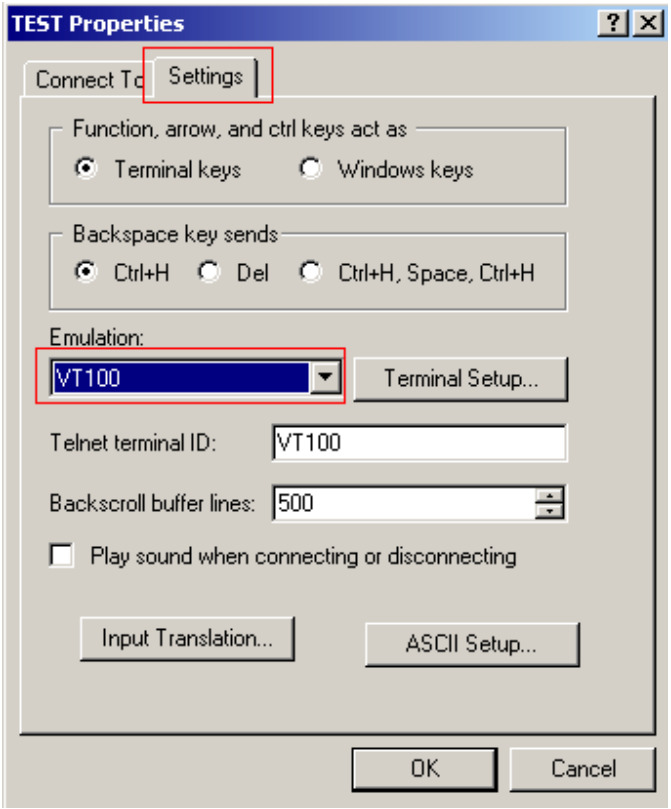
Step3. In Bits per second choose “ 9600 ” and in Flow control choose “ None ”。



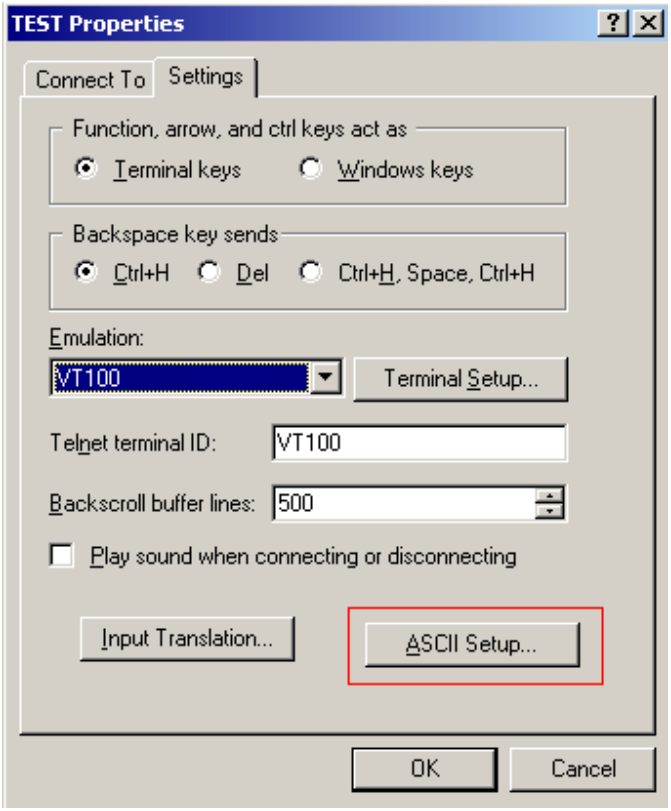
Step4. Click the File and choose Properties to setting Keyboard parameter。



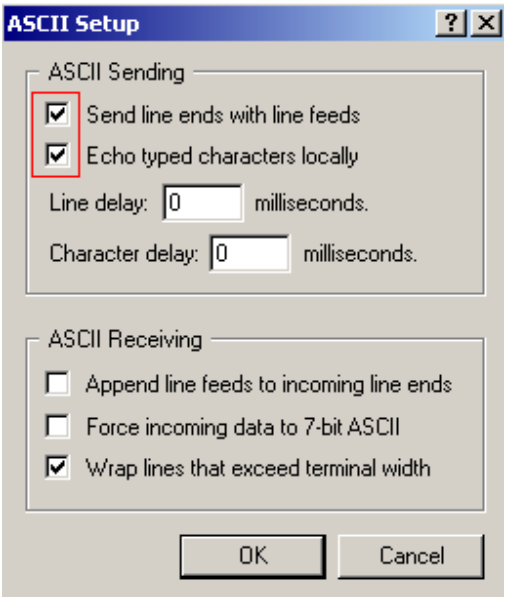
Step5. In Setting page , choose Emulation type for your keyboard.



Step6. Click ASCII Setting icon to setup ASCII code parameter.



Step7. Mark Send Line ends with line feeds and Echo typed characters locally and click OK bottom to complete setting.



10. EDID

a. Analog

128 BYTES OF EDID CODE :

	0	1	2	3	4	5	6	7	8	9
0	00	FF	FF	FF	FF	FF	FF	00	3E	8D
10	79	07	01	01	01	01	01	13	01	03
20	0E	00	00	78	0A	69	F1	A6	56	51
30	A0	24	10	4E	59	BF	EF	80	45	7C
40	61	7C	81	FC	81	19	81	99	90	40
50	95	00	A9	40	1E	2D	00	A0	40	00
60	2D	30	30	20	34	00	00	00	00	00
70	00	18	C8	32	00	A0	50	D0	1E	20
80	30	20	55	00	00	00	00	00	00	18
90	00	00	00	FD	00	32	55	0F	5A	11
100	00	0A	20	20	20	20	20	20	00	00
110	00	FC	00	45	58	37	37	39	0A	20
120	20	20	20	20	20	20	00	D7		

08-09) ID Manufacturer Name _____ = OTM

(11-10) Product ID Code _____ = 0779(Hex), 1913(Dec)

(12-15) Last 5 Digits of Serial Number _____ = 16843009(Dec), 01010101(Hex)

(16) Week of Manufacture _____ = 1

(17) Year of Manufacture _____ = 2009

(18) EDID Version Number _____ = 1

(19) EDID Revision Number _____ = 3

(20) VIDEO INPUT DEFINITION :

Analog Signal

0.700V/0.300V

Separate

Composite

Sync on Green

(21) Maximum Horizontal Image Size _____ = 0 mm

(22) Maximum Vertical Image Size _____ = 0 mm

(23) Display Gamma _____ = 2.20

(24) DPMS and Supported Feature(s) :

Preferred Timing Mode

RGB Color Display

(25-34) CHROMA INFO :

RedX : 0.649

RedY : 0.338
GreenX : 0.318
GreenY : 0.626
BlueX : 0.144
BlueY : 0.065
WhiteX : 0.305
WhiteY : 0.349

(35) ESTABLISHED TIMING I :
720 X 400 @ 70Hz (IBM,VGA)
640 X 480 @ 60Hz (IBM,VGA)
640 X 480 @ 67Hz (Apple,Mac II)
640 X 480 @ 72Hz (VESA)
640 X 480 @ 75Hz (VESA)
800 X 600 @ 56Hz (VESA)
800 X 600 @ 60Hz (VESA)

(36) ESTABLISHED TIMING II :
800 X 600 @ 72Hz (VESA)
800 X 600 @ 75Hz (VESA)
832 X 624 @ 75Hz (Apple, Mac II)
1024 X 768 @ 60Hz (VESA)
1024 X 768 @ 70Hz (VESA)
1024 X 768 @ 75Hz (VESA)
1280 X 1024 @ 75Hz (VESA)

(37) Manufacturer's Reserved Timing :
1152 X 870 @ 75Hz (Apple, Mac II)

(38-53) Standard Timing Identification :
800 X 600 @ 120Hz
1024 X 768 @ 120Hz
1280 X 720 @ 120Hz
1280 X 800 @ 85Hz
1280 X 1024 @ 85Hz
1400 X 1050 @ 60Hz
1440 X 900 @ 60Hz
1600 X 1200 @ 60Hz

(54- 71) Detailed Timing / Descriptor Block 1 :
1024 X 768 : Pixel Clock : 115 MHz

Horizontal Image Size : 0 mm Vertical Image Size : 0 mm
Refreshed Mode : Non-Interlaced
Horizontal :
Active Time : 1024 pixels Blanking Time : 160 pixels
Sync Offset : 48 pixels Sync Pulse Width : 32 pixels
Border : 0 pixels
Vertical :
Active Time : 768 lines Blanking Time : 45 lines
Sync Offset : 3 lines Sync Pulse Width : 4 lines
Border : 0 lines
None(Normal)
Digital Separate, Horizontal Polarity (-) Vertical Polarity (-)

(72- 89) Detailed Timing / Descriptor Block 2 :

1280 X 720 : Pixel Clock : 130 MHz
Horizontal Image Size : 0 mm Vertical Image Size : 0 mm
Refreshed Mode : Non-Interlaced
Horizontal :
Active Time : 1280 pixels Blanking Time : 160 pixels
Sync Offset : 48 pixels Sync Pulse Width : 32 pixels
Border : 0 pixels
Vertical :
Active Time : 720 lines Blanking Time : 30 lines
Sync Offset : 5 lines Sync Pulse Width : 5 lines
Border : 0 lines
None(Normal)
Digital Separate, Horizontal Polarity (-) Vertical Polarity (-)

(90-107) Detailed Timing / Descriptor Block 3 :

Monitor Range Limits :
Horizontal Freq. : 15-90 kHz
Vertical Freq. : 50-85 Hz
Pixel Clock : 170 MHz

(108-125) Detailed Timing / Descriptor Block 4 :

Monitor Name :
EX779

(126) No Extension EDID Block(s)

(127) CheckSum is OK

b. HDMI

EDID Block 0, Bytes 0-127 [00H-7FH]
Block Type: EDID 1.3

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	3E	8D	79	07	01	01	01	01
10	01	13	01	03	80	00	00	78	0A	69	F1	A6	56	51	A0	24
20	10	4E	59	BF	EF	80	45	7C	61	7C	81	FC	81	00	81	80
30	90	40	95	00	A9	40	1E	2D	00	A0	40	00	2D	30	30	20
40	34	00	00	00	00	00	00	18	C8	32	00	A0	50	D0	1E	20
50	30	20	55	00	00	00	00	00	00	18	00	00	00	FD	00	32
60	55	1F	5A	11	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	45	58	37	37	39	0A	20	20	20	20	20	20	20	01	86

(08H-09H) ID Manufacturer Name _____ = OTM
(0AH-0BH) Product ID Code _____ = 0779
(0CH-0FH) Last 5 Digits of Serial Number _____ = UNUSE
(10H) Week of Manufacture _____ = 01
(11H) Year of Manufacture _____ = 2009
(12H) EDID Version Number _____ = 1
(13H) EDID Revision Number _____ = 3
(14H) VIDEO INPUT DEFINITION:
Digital Signal
(15H) Maximum Horizontal Image Size _____ = mm
(16H) Maximum Vertical Image Size _____ = mm
(17H) Display Gamma _____ = 2.20
(18H) DPMS and Supported Feature(s):
Preferred Timing Mode
Display Type = R/G/B Color
(19H-22H) CHROMA INFO:
Red x - 0.649 Green x - 0.318 Blue x - 0.144 White x - 0.305
Red y - 0.338 Green y - 0.626 Blue y - 0.065 White y - 0.349
(23H) ESTABLISHED TIMING I:
720 x 400 @ 70Hz (IBM,VGA)
640 x 480 @ 60Hz (IBM,VGA)
640 x 480 @ 67Hz (Apple,Mac II)
640 x 480 @ 72Hz (VESA)
640 x 480 @ 75Hz (VESA)

800 x 600 @ 56Hz (VESA)
800 x 600 @ 60Hz (VESA)

(24H) ESTABLISHED TIMING II:

800 x 600 @ 72Hz (VESA)
800 x 600 @ 75Hz (VESA)
832 x 624 @ 75Hz (Apple,Mac II)
1024 x 768 @ 60Hz (VESA)
1024 x 768 @ 70Hz (VESA)
1024 x 768 @ 75Hz (VESA)
1280 x 1024 @ 75Hz (VESA)

(25H) Manufacturer's Reserved Timing:

1152 x 870 @ 75Hz (Apple,Mac II)

(38-53) Standard Timing Identification:

Standard Timing ID 1: 800 x 600 @120Hz
Standard Timing ID 2: 1024 x 768 @120Hz
Standard Timing ID 3: 1280 x 720 @120Hz
Standard Timing ID 4: 1280 x 800 @60Hz
Standard Timing ID 5: 1280 x 1024 @60Hz
Standard Timing ID 6: 1400 x 1050 @60Hz
Standard Timing ID 7: 1440 x 900 @60Hz
Standard Timing ID 8: 1600 x 1200 @60Hz

(36H-47H) Detailed Timing / Descriptor Block 1:

1024x768 Pixel Clock: 115.50 MHz

Horizontal Image Size: 0 mm Vertical Image Size: 0 mm
Refreshed Mode: Non-Interlaced Normal Display - No Stereo

Horizontal:

Active Count: 1024 pixels Blanking Count: 160 pixels
Sync Offset: 48 pixels Sync Pulse Width: 32 pixels
Border: 0 pixels Frequency: 97.55 kHz

Vertical:

Active Count: 768 lines Blanking Count: 45 lines
Sync Offset: 3 lines Sync Pulse Width: 4 lines
Border: 0 lines Frequency: 119.99 Hz

Digital Separate, Horizontal Polarity (-) Vertical Polarity (-)

(48H-59H) Detailed Timing / Descriptor Block 2:

1280x720 Pixel Clock: 130.00 MHz

Horizontal Image Size: 0 mm Vertical Image Size: 0 mm

Refreshed Mode: Non-Interlaced Normal Display - No Stereo

Horizontal:

Active Count: 1280 pixels Blanking Count: 160 pixels

Sync Offset: 48 pixels Sync Pulse Width: 32 pixels

Border: 0 pixels Frequency: 90.28 kHz

Vertical:

Active Count: 720 lines Blanking Count: 30 lines

Sync Offset: 5 lines Sync Pulse Width: 5 lines

Border: 0 lines Frequency: 120.37 Hz

Digital Separate, Horizontal Polarity (-) Vertical Polarity (-):

(5AH-6BH) Detailed Timing / Descriptor Block 3:

Monitor Range Limits:

Min Vertical Freq - 50 Hz

Max Vertical Freq - 85 Hz

Min Horiz. Freq - 31 kHz

Max Horiz. Freq - 90 kHz

Pixel Clock - 170 MHz

GTF - Not Used

(6CH-7DH) Detailed Timing / Descriptor Block 4:

Monitor Name:

EX779

(7EH) Block No: (01) Extension EDID Block(s)

(7FH) CheckSum OK

EDID Block 1, Bytes 128-255 [80H-FFH]
Block Type: CEA EDID Timing Extension Version 3

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	23	71	50	01	02	03	11	12	04	05	13	14	90	06
10	15	20	21	22	1F	23	09	07	04	83	01	00	00	65	03	0C
20	00	10	00	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	13
30	8E	21	00	00	18	8C	0A	D0	90	20	40	31	20	0C	40	55
40	00	C4	8E	21	00	00	18	01	1D	00	72	51	D0	1E	20	6E
50	28	55	00	C4	8E	21	00	00	1E	02	3A	80	18	71	38	2D
60	40	58	2C	45	00	00	00	00	00	00	1E	00	00	00	FF	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	59

Extended Block Type: CEA 861B

Detailed Timing Blocks start at Byte:(23H)

Native Format: (0x1)

(03H) DTV (Basic Audio)

(03H) YCbCr (4:4:4)

(03H) YCbCr (4:2:2)

Video Short Block Description:

(05H) 640 x 480 P 59.94/60Hz 4:3

(06H) 720 x 480 P 59.94/60Hz 4:3

(07H) 720 x 480 P 59.94/60Hz 16:9

(08H) 720 x 576 P 50Hz 4:3

(09H) 720 x 576 P 50Hz 16:9

(0AH) 1280 x 720 P 59.94/60Hz 16:9

(0BH) 1920 x 1080 I 59.94/60Hz 16:9

(0CH) 1280 x 720 P 50Hz 16:9

(0DH) 1920 x 1080 I 50Hz 16:9

(0EH) 1920 x 1080 P 59.94/60Hz 16:9 Native Mode

(0FH) 720(1440) x 480 I 59.94/60Hz 4:3

(10H) 720(1440) x 576 I 50Hz 4:3

(11H) 1920 x 1080 P 23.97/24Hz 16.9

(12H) 1920 x 1080 P 25Hz 16.9

(13H) 1920 x 1080 P 29.97/30Hz 16.9

(14H) 1920 x 1080 P 50Hz 16.9

Audio Short Block Description:

Numbers of Audio Channels (2)

(16H) Linear PCM(IEC60958)
Audio Supported: 32kHz, 44.1kHz, 48kHz
Audio Bit Rate: 24Bit
Speaker Short Block Description:
Playload(3 bytes 1AH-1CH)
Speakers (1AH): FL/FR
1BH: Reserved
1CH: Reserved
Vendor Specific Short Block Description:
Bytes: 03H, 0CH, 00H, 10H, 00H
(23H - 35H) Detailed Timing Descriptions:
720x480 Pixel Clock: 27.00 MHz

Horizontal Image Size: 531 mm Vertical Image Size: 398 mm
Refreshed Mode: Non-Interlaced Normal Display - No Stereo
Horizontal:
Active Count: 720 pixels Blanking Count: 138 pixels
Sync Offset: 16 pixels Sync Pulse Width: 62 pixels
Border: 0 pixels Frequency: 31.47 kHz
Vertical:
Active Count: 480 lines Blanking Count: 45 lines
Sync Offset: 9 lines Sync Pulse Width: 6 lines
Border: 0 lines Frequency: 59.94 Hz
Digital Separate, Horizontal Polarity (-) Vertical Polarity (-):
(35H - 47H) Detailed Timing Descriptions:
720x576 Pixel Clock: 27.00 MHz

Horizontal Image Size: 708 mm Vertical Image Size: 398 mm
Refreshed Mode: Non-Interlaced Normal Display - No Stereo
Horizontal:
Active Count: 720 pixels Blanking Count: 144 pixels
Sync Offset: 12 pixels Sync Pulse Width: 64 pixels
Border: 0 pixels Frequency: 31.25 kHz
Vertical:
Active Count: 576 lines Blanking Count: 49 lines
Sync Offset: 5 lines Sync Pulse Width: 5 lines

Border: 0 lines Frequency: 50.00 Hz

Digital Separate, Horizontal Polarity (-) Vertical Polarity (-)

(47H - 59H) Detailed Timing Descriptions:

1280x720 Pixel Clock: 74.25 MHz

Horizontal Image Size: 708 mm Vertical Image Size: 398 mm

Refreshed Mode: Non-Interlaced Normal Display - No Stereo

Horizontal:

Active Count: 1280 pixels Blanking Count: 370 pixels

Sync Offset: 110 pixels Sync Pulse Width: 40 pixels

Border: 0 pixels Frequency: 45.00 kHz

Vertical:

Active Count: 720 lines Blanking Count: 30 lines

Sync Offset: 5 lines Sync Pulse Width: 5 lines

Border: 0 lines Frequency: 60.00 Hz

Digital Separate, Horizontal Polarity (+) Vertical Polarity (+)

(59H - 6BH) Detailed Timing Descriptions:

1920x1080 Pixel Clock: 148.50 MHz

Horizontal Image Size: 0 mm Vertical Image Size: 0 mm

Refreshed Mode: Non-Interlaced Normal Display - No Stereo

Horizontal:

Active Count: 1920 pixels Blanking Count: 280 pixels

Sync Offset: 88 pixels Sync Pulse Width: 44 pixels

Border: 0 pixels Frequency: 67.50 kHz

Vertical:

Active Count: 1080 lines Blanking Count: 45 lines

Sync Offset: 4 lines Sync Pulse Width: 5 lines

Border: 0 lines Frequency: 60.00 Hz

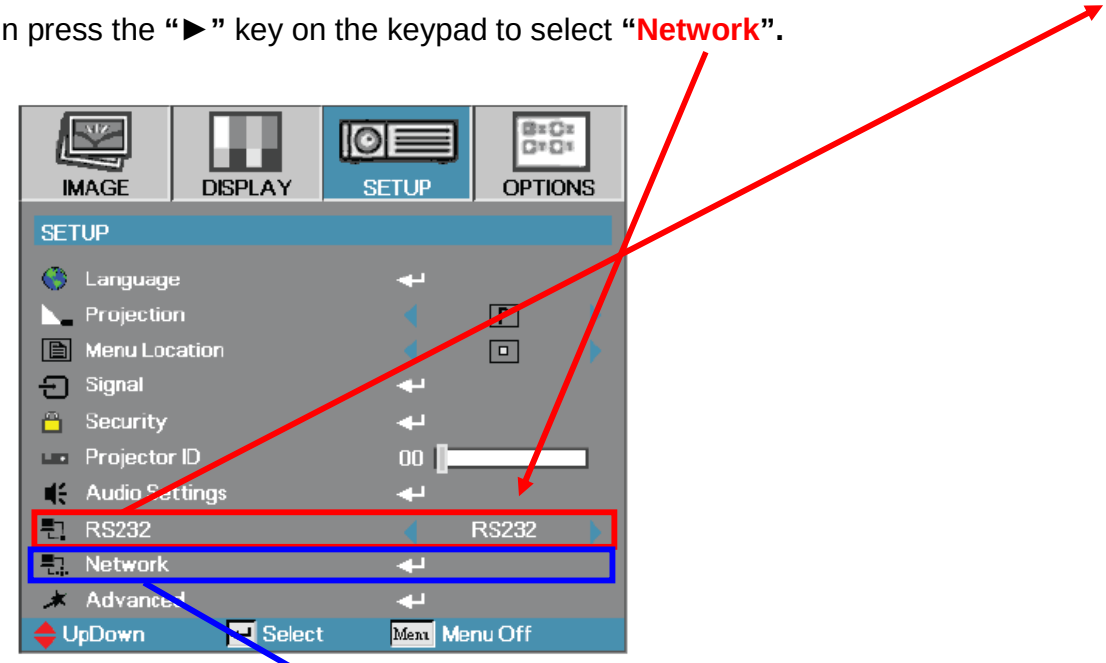
Digital Separate, Horizontal Polarity (+) Vertical Polarity (+)

(7FH) CheckSum Valid

11. RJ45

11-1. OSD Setting

1. Press the **“menu”** key on the keypad or by remote control, select **“SETUP”->“RS232 ”,** then press the **“►”** key on the keypad to select **“Network”.**

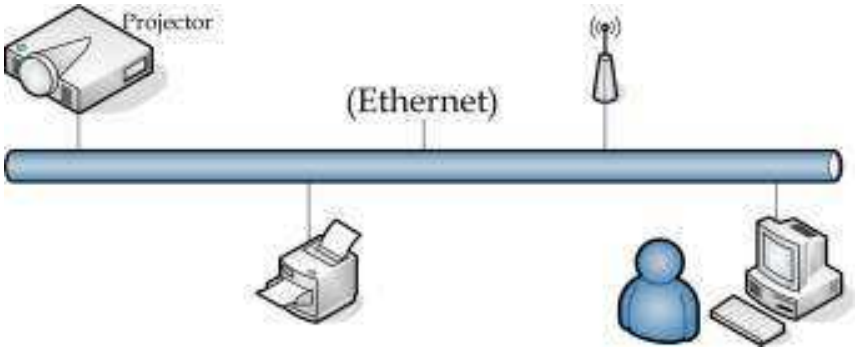


2. select **“SETUP”->“ Network ”,** then press **“Enter”** on the keypad, enter below OSD. Select **“DHCP”,** then press **“►”** key on the keypad to select **“off”.**

Please be sure the DHCP is off.

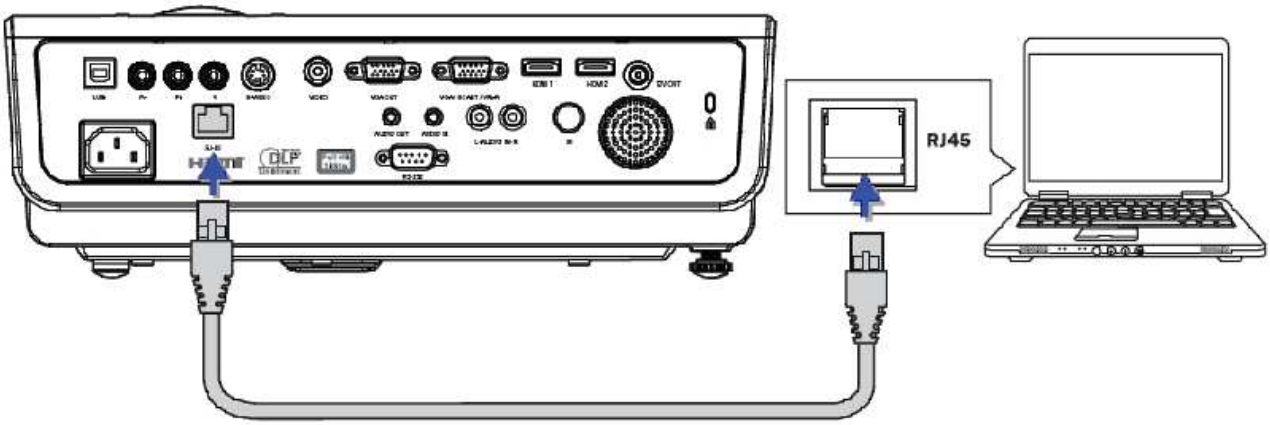
For simplicity and ease of operation, the projector provides diverse networking and remote management features.

The LAN/RJ45 function of the projector through a network, such as remotely manage: Power On/Off, Brightness and Contrast settings. Also, projector status information, such as: Video-Source, Sound-Mute, etc.



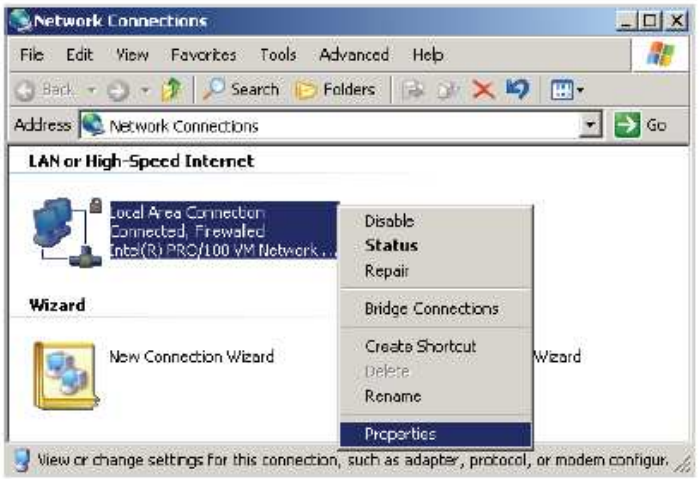
11-2. LAN_RJ45

1. Connect an RJ45 cable to RJ45 ports on the projector and the PC (Laptop)

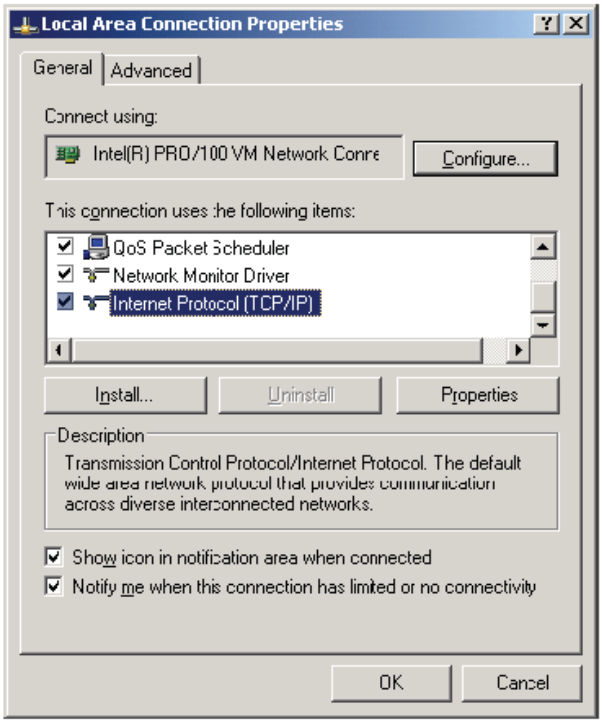


2. On the PC (Laptop), select **Start ->Control Panel-> Network Connections**.

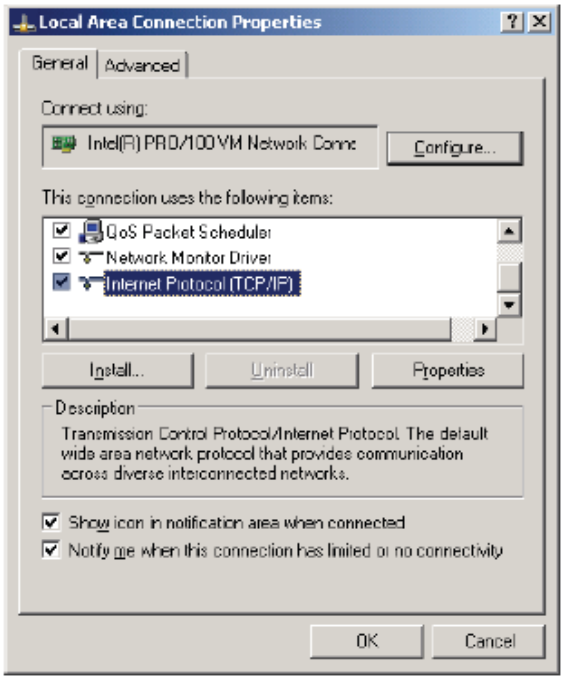
3. Right-click on **Local Area Connection**, and select **Properties**.



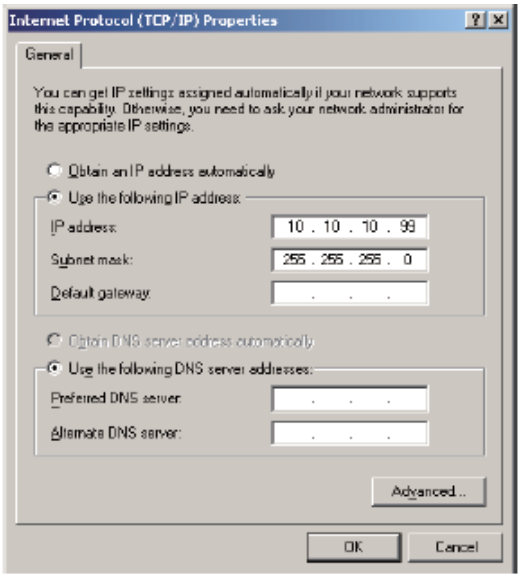
4. In the **Properties** window, select the **General** tab, and select **Internet Protocol (TCP/IP)**.



5. Click Properties.



6. Click Use **the following IP address** and fill in the IP address and Subnet mask, then click **OK**.



7. Press the **Menu** button on the projector.

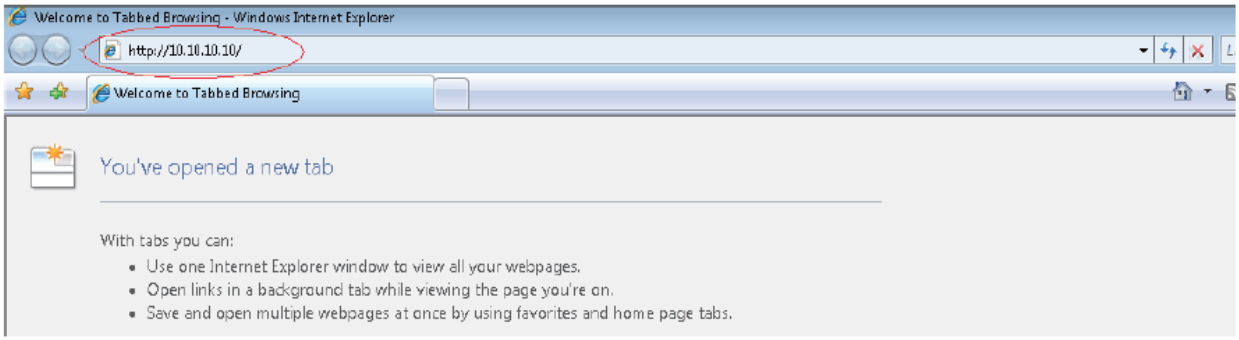
8. Select **OSD->SETUP->Network->Enabled**

9. After getting into **Network**, input the following:

- DHCP: Off
- IP Address: 10.10.10.10
- Subnet Mask: 255.255.255.0
- Gateway: 0.0.0.0
- DNS Server: 0.0.0.0

10. Press **Apply** (Enter) to confirm settings.

11. Open a web browser (ex, Microsoft Internet Explorer with Adobe Flash Player 9.0 or higher).



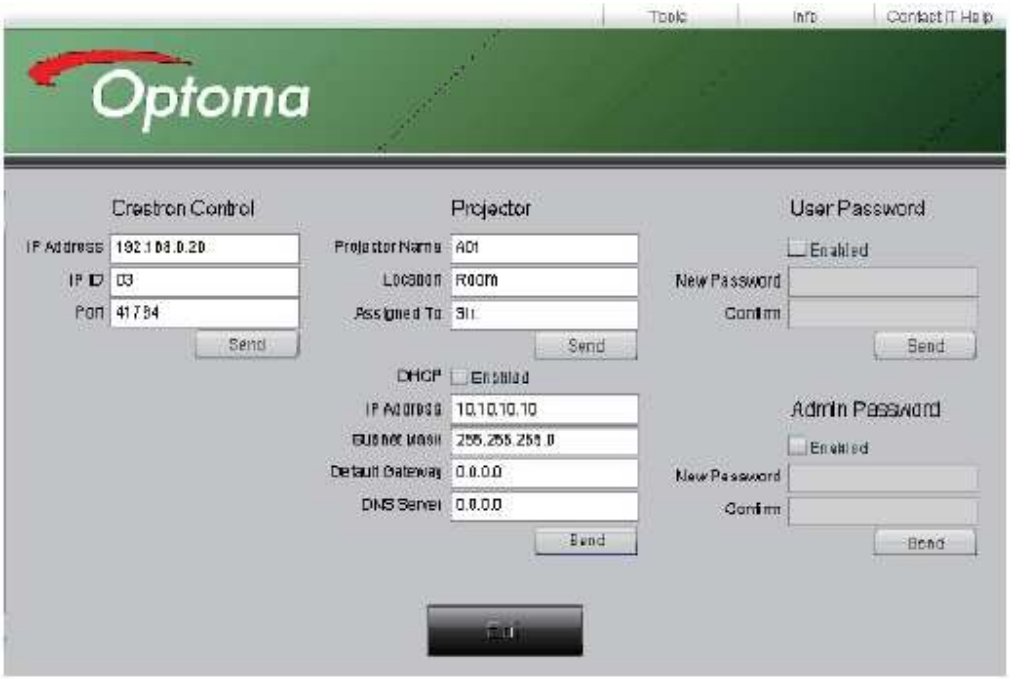
12. In the address bar, input the IP address: 10.10.10.10

13. Press **Apply.**

The projector is setup for remote management. The LAN/RJ45 function displays as follows.

14. Base on network web-page for the input-string in **[tools]** tab, the limitation for input-Length is in the below list (“space” and the other punctuation key included):

Category	Item	Input-Length (characters)
Crestron Control	IP Address	15
	IP ID	2
	Port	5
Projector	Projector Name	10
	Location	9
	Assigned To	9
Network Configuration	DHCP (Enabled)	(N/A)
	IP Address	15
	Subnet Mask	15
	Default Gateway	15
	DNS Server	15
User Password	Enabled	(N/A)
	New Password	15
	Confirm	15
Admin Password	Enabled	(N/A)
	New Password	15
	Confirm	15



12. SERVICE NOTE

Cleaning the projector to remove dust and grime will help ensure trouble-free operation.

a. Be sure to turn off and unplug the projector at least 30 minutes before cleaning.
Failure to do so could result in a severe burn.

b. Use only a dampened cloth when cleaning.
Do not allow water to enter the ventilation openings on the projector.

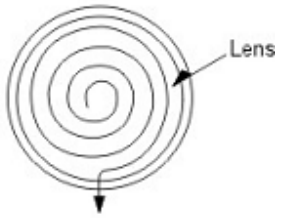
c. If a little water gets into the projector interior while cleaning,
leave unplugged in a well-ventilated room for several hours before using.

d. If a lot of water gets into the projector interior when cleaning, have the projector serviced.

1. Cleaning the Lens

You can purchase optic lens cleaner from most camera stores. Refer to the following to clean the projector lens.

1. Apply a little optic lens cleaner to a clean soft cloth.
   (Do not apply the cleaner directly to the lens.)
2. Lightly wipe the lens in a circular motion.



Caution:

A. Do not use abrasive cleaners or solvents.

B. To prevent discoloration or fading, avoid getting cleaner on the projector case

2. Cleaning the Case

Refer to the following to clean the projector case.

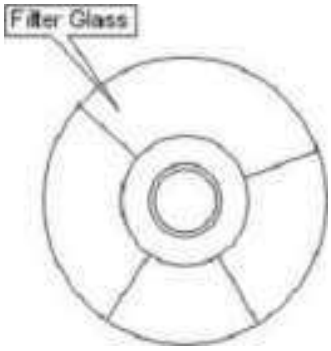
1. Wipe off dust with a clean dampened cloth.
2. Moisten the cloth with warm water and mild detergent (such as used to wash dishes), and then wipe the case.
3. Rinse all detergent from the cloth and wipe the projector again

Caution:

To prevent discoloration or fading of the case, do not use abrasive alcohol-based cleaners.

3. Cleaning the Color Wheel Assy

1. The color filter is made of thin glass. Be very careful when handing the filter.
2. In case of fingerprints, etc. on the surface, clean in the same way as the projection lens unit. Do not use detergents as this could cause peeling of the color filter.



4. Cleaning the DMD

1. The DMD surface is glass and can be cleaned. However, avoid scratches as these can have a direct influence on the image.
2. In case of dust on the DMD surface use an air cleaner (with a device to prevent static, if possible) to clean off the surface.
3. In case of fingerprints, etc., add a small amount of water to the designated glass cleaner and wipe off in one direction. Then use the designated dry glass cleaner to wipe off in the same direction.
4. Do not use absolute alcohol or other substances that could leave streaks after drying.

5. Cleaning the Reflecting Mirror

1. Be careful not to touch the reflecting mirror. The surface is composed of vapor deposition silver and touching it directly with the hands can lead to burnishing.
2. Do not clean other than with air.

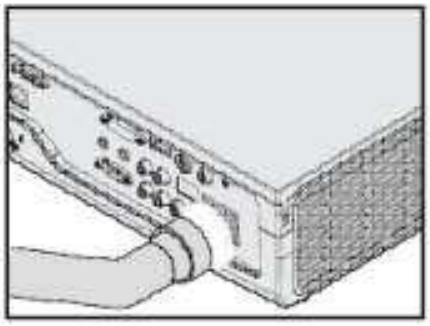
6. Cleaning a Soiled Projector Main Unit.

(1). Wipe with a lint-free, soft, dry cloth. When very dirty, wipe with a cloth that has been moistened with a diluted neutral detergent, then finish with a dry cloth. If a chemically-treated cloth is going to be used, please follow any written warnings.
(2). Do not wipe with thinner, benzene, or other solvents. Doing so could cause them to undergo qualitative changes or the coatings may peel, etc.
(3). When removing the dust of the outflow and intake holes, use the brush attachment on a vacuum cleaner to clean out thedust. Avoid using the vacuum directly without attaching the adapter as well as the use of a nozzle adapter.
(4). Do not scratch or otherwise hit the projector body with your nails or other hard object, since this will cause scratches.

7. Dust of the Intake and Outflow Holes

Dust that collects in the intake and outflow holes will obstruct the ventilation and cause the internal temperature to rise which could cause damage. Clean this area carefully. As a guideline, clean at least every 100 hours of usage.

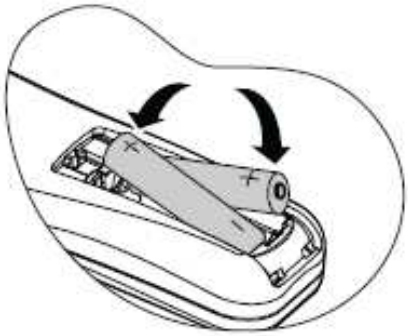
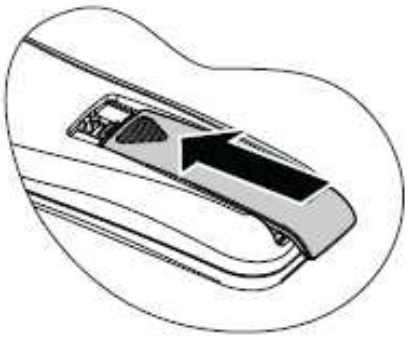
a. Turn off the power and check that the indicator of the POWER/STANDBY has changed so that it is lit in orange, and then disconnect the power cable.
b. Vacuum from the outside with an electric vacuum cleaner. Use a brush-tipped adapter with the vacuum cleaner. Note that use of a vacuum without an adapter, or use of an adapter without a brush should be avoided.



8. Cleaning the Inside of the Projector

Cleaning of the inside of the projector is required about once a year. Failure to clean over a long period while dust has collected inside the projector could cause a fire or breakdown. Do not clean the inside of the projector by yourself. Please be sure to contact your dealer.

13. Inserting the Remote Control Batteries

1. Remove the battery compartment cover by sliding the cover in the direction of the arrow.	
2. Insert the supplied batteries taking note of the polarity (+/-) as shown here.	
3. Replace the cover.	

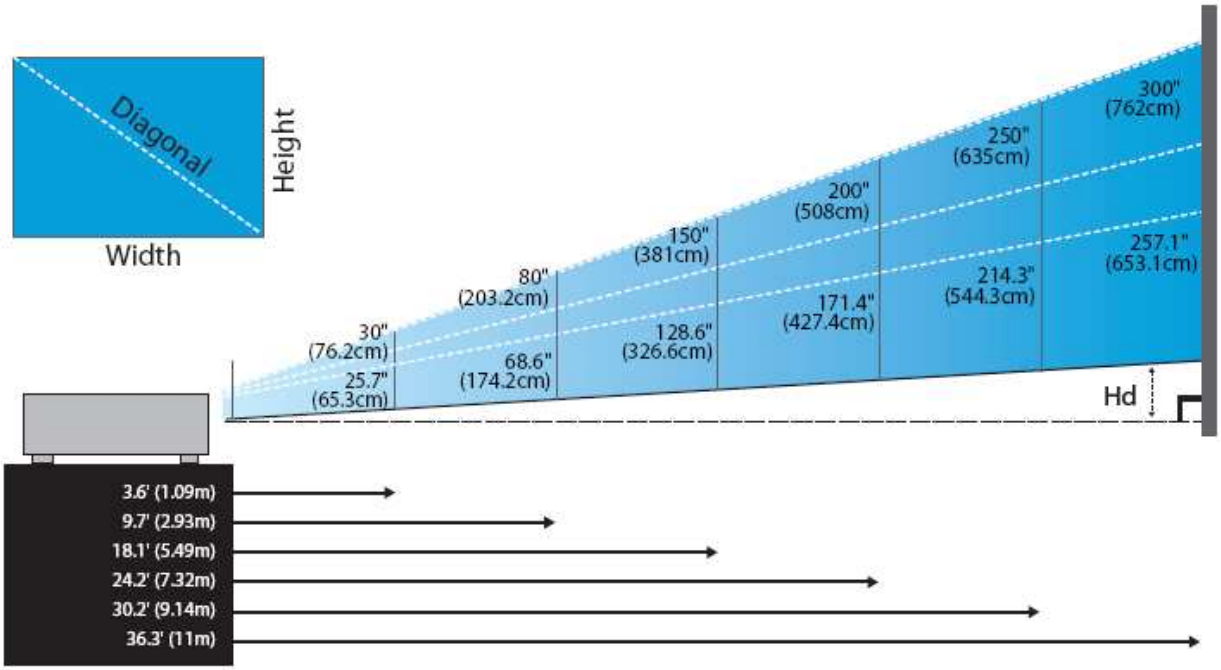
Avoid excessive heat and humidity.

- There may be battery damage if the battery is incorrectly replaced.
- Replace only with the same or equivalent type recommended by the battery manufacturer.
- Dispose of the used battery according to the battery manufacturer's instructions.
- Never throw a battery into a fire. There may be danger of an explosion.
- If the battery is dead or if you will not be using the remote control for a long time, Remove the battery to prevent damage to the remote control from possible battery leakage.

14. LED Indicator Table

ERROR CODE MESSAGES	POWER LED BLINK	TEMP LED BLINK	LAMP LED BLINK
Standby State (Input power cord)	Slow Flashing 2 sec off 2 sec on	Off	Off
Power on (Warming)	Flashing 0.5 sec off 0.5 sec on	Off	Off
Power on & Lamp lighting	Steady light	Off	Off
Error (Lamp fail)	Flashing 0.5 sec off 0.5 sec on	Off	Steady light
Error (Fan fail)	Flashing 0.5 sec off 0.5 sec on	Flashing 0.5 sec off 0.5 sec on	Off
Error (Over Temp)	Flashing 0.5 sec off 0.5 sec on	Steady light	Off
G794 Error	4	Off	4
T1 Sensor Error	4	Off	5
Thermal Break / Case Open Error	7	Off	Off
Color Wheel Error	9	Off	Off

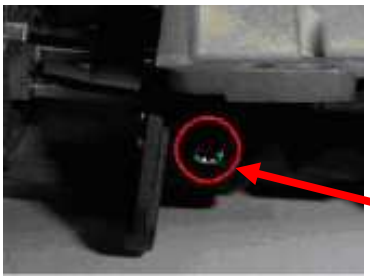
15. Screen Size and Projection Distance



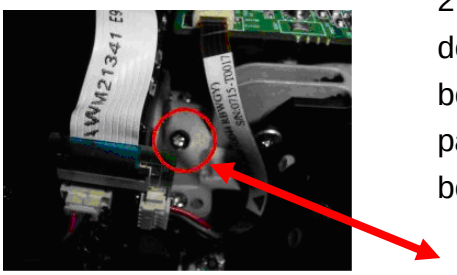
Screen (Diagonal)	Max.	30" 76.2cm	80" 203.2cm	150" 381cm	200" 508cm	250" 635cm	300" 762cm
	Min.	25.7" 65.3cm	68.6" 174.2cm	128.6" 326.6cm	171.4" 427.4cm	214.3" 544.3cm	257.1" 653.1cm
Screen size	Max (WxH).	24x18" 61x45.7cm	64x48" 162.6x121.9cm	120x90" 304.8x228.6cm	160x120" 406.4x304.8cm	200x150" 508x381cm	240x180" 609x457cm
	Min. (WxH)	20.6x15.4" 52.2x39.2cm	54.9x41.4" 139.3x104.5cm	102.9x77.1" 261.3x195.9cm	137.1x102" 348.3x261.3cm	171.4x128.6" 435.4x326.6cm	205.7x154.3" 522.5x391.9cm
Hd	Max.	2.2" 5.5cm	5.8" 14.6cm	10.8" 27.4cm	14.4" 36.3cm	18" 45.7cm	21.6" 54.3cm
	Min.	1.9" 4.7cm	4.9" 12.5cm	9.3" 23.5cm	12.3" 31.4cm	15.4" 39.2cm	18.5" 47cm
Distance		3.6'(1.09m)	9.7'(2.93m)	18.1'(5.49m)	24.2'(7.32m)	30.2'(9.14m)	36.3'(11m)

16. Color Border Adjustment

Step1: Adjust integration rod screw to eliminate color edge @ White pattern

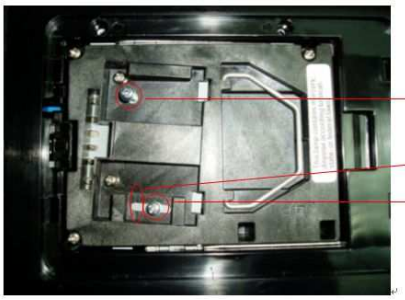


1. Adjust the hexagonal screw in order to right and right side color border disappeared. (Enable just disappearing of right side color border on the full white pattern)



2. Adjust the hexagonal screw in order to up and down side color border disappeared. By the color border is margin value on the down side of full white pattern. (Enable just disappearing of down side color border on the full white pattern)

Step 2 : Adjust lamp module angle to set the maximum brightness measured by CL200



=> Adjusted screw.

=> The initial fixed point.

=> Fixed screw.

Loosed the fixed screw, CL200 is putted on the center of the screen（When full set is putted upside down）, to adjust the adjusted screw gets the highest luminance value then fixed the screw in the moment.

17. Table of Supported Frequency

Computer Compatibility

Signal	Resolution	Refresh Rate (Hz)
NTSC	-	60
PAL/SECAM	-	50
VESA	640 x 350	70.1/ 85.1
	640 x 400	70.1 / 85.1
	720 x 350	70
	720 x 400	70/ 85
	720 x 576	50/ 60
VGA	640 x 480	60/ 67/ 72.8/ 75/ 85
SVGA	800 x 600	56.3/ 60.3/ 75/ 72.2/ 80/ 85.1/ 120
	832 x 624	72/ 75
	1024 x 576	50/ 60
XGA	1024 x 768	60/ 70.1/ 72/ 75/ 85/ 120
	1152 x 864	60/ 70/ 75/85
HD720	1280 x 720	50/ 60/ 75/ 85/ 120
WXGA	1280 x 768	60/ 70/ 75/ 85
WXGA-800	1280 x 800	60
SXGA	1280 x 1024	60/ 75/85
SXGA+	1400 x 1050	60
UXGA	1600 x 1200	60
	1600 x 1050	60
HDTV	1920 x 1080	25/30
	1920 x 1080i	50/ 60
	1920 x 1080p	24/25/30/50/ 60
	1280 x 720	60
	1280 x 720p	50/ 60
SDTV	720 x 576	50
	720 x 576i	50
	720 x 576p	50
	720 x 480	60
	720 x 480i	60
	720 x 480p	60

Apple Mac Compatibility

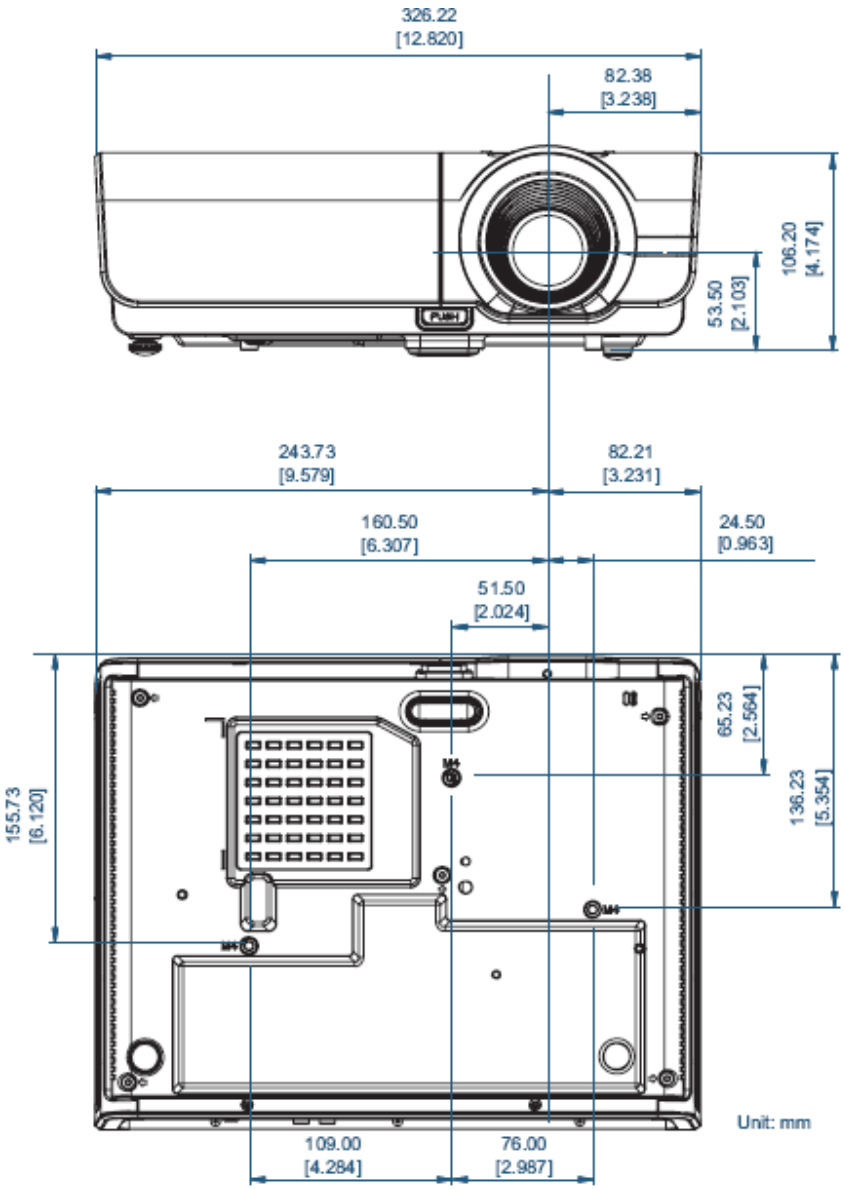
Resolution		Macbook	Macbook Pro (Intel)	Power Mac G5	Power Mac G4
	Hz-	Analog	Analog	Analog	Analog
800x600	60	o	o	-	-
800x600	72	o	o	o	o
800x600	75	o	o	o	o
800x600	85	o	o	o	o
1024x768	60	o	o	o	o
1024x768	70	o	o	o	o
1024x768	75	o	o	o	o
1024x768	85	o	o	o	o
1280x720	60	o	o	o	o
1280x720	75	o	o	-	o
1280x720	85	o	o	-	o
1280x768	60	o	o	-	o
1280x768	75	o	o	o	o
1280x768	85	o	o	-	o
1280x800	60	o	o	o	o
1280x1024	60	-	o	o	o
1280x1024	75	-	o	o	-
1680x1050	60	o	o	-	-
1920x1200	60	o	o	-	-

18. Ceiling Installation

To prevent damage to your projector please use the recommended mounting package for installation.

To ensure compliance, only use a UL Listed ceiling mount and screws that meet the following specifications:

Screw Type: M4
Maximum screw length: 11mm
Minimum screw length: 9mm



19. Spare parts list

EX779_DP437-570OTxA (Spare parts list)			
NO	DESCRIPTION	P/N	Q'ty
1	TOP COVER PC 5VB BLK	3392141800	1
2	CASE BOTTOM PC 945VB BLK	3392102000	1
3	IO COVER PC 946VB BLK	3392108800	1
4	LAMP COVER PPS 94V0 BLK	3392142200	1
5	LENS CAP	3392144800	1
6	ADJ FRONT FOOT LEG PC 94V0 BLK	3392026001	1
7	CASE OUTLET PC 945VB BLK	3392085601	1
8	CASE INLET PC 945VB BLK	3392085701	1
9	IR WINDOW PC 94HB DRAK PURPLE	3392086300	1
10	DC FAN ASSY NFB08512H-SE00 L80/50 85 B	3620850011	1
11	DC FAN ASSY BUB0612HB-SM03 L300/195 60 S	3622608211	1
12	DC FAN ASSY AUB0712MB-R00 L50/20 70 S	3622701811	1
13	DC FAN ASSY AUB0812H-SE17 L35/10 80 S	3622843011	1
14	PWB ASSY MAIN BOARD DP486-57A OPTOMA	5600601410	1
15	PWB ASSY POWER BOARD J4P+ 280W DP437-570	5600601408	1
16	PWB ASSY IO BOARD	5600600970	1
17	PWB ASSY DMD BD 1080P SINGLE	5600600860	1

NO	DESCRIPTION	P/N	Q'ty
18	PWB ASSY KEYPAD BOARD DP486-57A OPTOMA	5600601039	1
19	PWB ASSY RJ45 BOARD DP486-57A OPTOMA	5600601413	1
20	PWB ASSY INDEX BD HT-8600 BENQ J4P+	5600600859	1
21	PWB ASSY IR BOARD DP-3636 LENOVO J4P+	5600601060	1
22	LAMP DRIVER 280W UNISHAPE O3 TOP	0990077900	1
23	Color Wheel	3797721200	1
24	LAMP SERVICE J4P+J4P-E20.9-280W OPTOMA	5811116519-SOT	1
25	OPTICAL SERVICE J4P+ 0.65" 1080P E20.9	5811116538-S	1
26	BOX CRGD PAPER 453*383*192	3513723301	1
27	BAG PE 660*490 (For Carrying Case)	3500910900	1
28	BAG PE 450*370 WT (For Machine)	3501372500	1
29	AIR BUBBLE BAG LDPE 850*520 CLR (Cushion Top)	3505016000	1
30	AIR BUBBLE BAG LDPE 1160*300 CLR (Cushion Btm)	3505016101	1
31	SWITCH ASSY J5P5.6LB	3606008901	1
32	WIRE WITH THERMOBKT J4P PLUS	3791040100	1
33	AC POWER CORD 3P 3G* 0.75mm^2 L1800 (For EMEA)	3090116101	1

34	**AC POWER CORD 3P #18*3C L1800 (For TW & USA)**	**3090107601**	**1**
35	**CABLE SIGNAL D-SUB D-SUB L1800 BLK**	**3081405002**	**1**
36	**CD SOFTWARE PACKING**	**3534130100**	**1**
37	**CARD QUICK START DP486-57A OPTOMA**	**5010092200**	**1**
38	**CARRYING CASE PLE 345*300*145**	**3523501500**	**1**
39	**REMOTE CONTROLLER 27KEYS**	**5041820600**	**1**

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				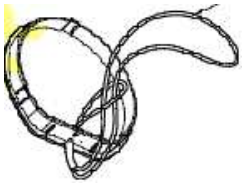
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	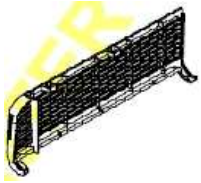	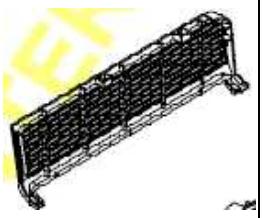		
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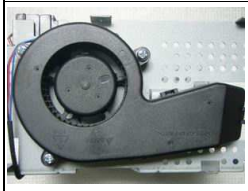		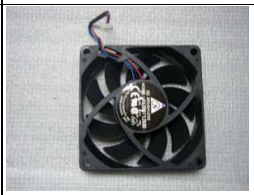	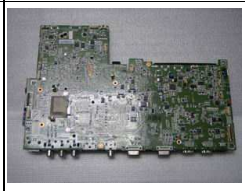	
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26	**27**	**28**	**29**	**30**
				

31	32	33	34	35
				
36	**37**	**38**	**39**