SERVICE MANUAL

EX612/EX615/EW615i/EX612i/ EX615i

Date	Revise Version	Description
2009.07.08	V1.0	Initial Issue
2009.10.13	V2.0	Add EX540/EX762
2009.12.16	V3.0	Add EX540I/EX542I
2010.01.30	V4.0	Add ES523ST/EW533ST; Modify “Defect specification table” in Chapter 4;
2010.05.20	V5.0	Delete EX540/EX762/EX540I/EX542I/ES523ST/EW533ST
2011.05.04	V6.0	Add EW615i
2011.09.03	V7.0	Add EW612i/ EX615i

Prepare: Cherry Check: Amy Approved

Preface

This manual is applied to EX612/EX615/EW615i/EX612i/EX615i projection system. The manual gives you a brief description of basic technical information to help in service and maintain the product.

Your customers will appreciate the quick response time when you immediately identify problems that occur with our products. We expect your customers will appreciate the service that you offer them.

This manual is for technicians and people who have an electronic background. Please send the product back to the distributor for repairing and do not attempt to do anything that is complex or is not mentioned in the troubleshooting.

Notice: The information found in this manual is subject to change without prior notice. Any subsequent changes made to the data herein will be incorporated in future edition.

EX612/EX615/EW615i/EX612i/EX615i Service Manual

Manual Version 7.0

EX612/EX615/EW615i/EX612i/ EX615i Comparison List

Parts	EX615	EX612	EX612i	EW615i	EX615i
USER'S GUIDE	36.8EF01G001	36.8FK01G001	36.8NN01G001	36.8MP01G001	
OPTICAL ENGINE MODULE	70.8EF40GR01	70.8FK03GR01		70.8MP01GR01	70.8NA39GR01
MAIN BOARD MODULE	70.8EF43GR01	80.8FK01G001	80.8NN01G001	80.8MP01G001	70.8NA38GR01
IO COVER MODULE	70.8EF44GR01	70.8FK02GR01		70.8EF44GR01	70.8NA37GR01
DMD CHIP	48.8CQ01G003			48.8EJ01G001	48.8CQ01G003
ROD MODULE	70.8EF42GR01			70.8LM15GR01	70.8EF42GR01
COLOR WHEEL MODULE	70.8EF41GR01		70.8FB23GR01		
LAN BOARD	80.8EF07G001	NA		80.8MP07G002	
LAMP	SP.8EG01GC01			SP.8MP01GC01	SP.8EG01GC01

Table of Content

Chapter 5 Firmware Upgrade

Chapter 1

Introduction

1-1 Highlight

No	Item	Description
1	Technology	● 0.55” XGA 2xLVDS SERIES 450 DMD DC3 (For EX615/EX612/ EX612i/EX615i) ● 0.65” WXGA 2xLVDS SERIES 450 DMD DC3(For EW615i)
2	Dimension (W x D x H)	● 324 x 234 x 97 mm
3	Weight	● 6.3-6.4 lbs
4	Power Supply	● Auto-ranging: 100V~ 240V ± 10%, 50~ 60Hz
5	Keystone Correction	● +/-40 degree (TI spec.)
6	Resolution	● Native Resolution: 1024 x 768(For EX615/EX612/EX612i/ EX615i) ● Native Resolution: 1280 x 800(For EW615i)
7	Power consumption	● Full Mode:(Typ)298W,(Max)328W @ac 110V ● ECO Mode:(Typ)247W,(Max)272W @ac 110V
8	Throw ratio	● 1.95 ~ 2.15 @60”(For EX615/EX612/EX612i) ● 1.28~1.536:1 @60” (For EW615i) ● 1.6~1.92(D/W) @ 60” (For EX615i)
9	Projection lens	● YM09X/FPL30, F# 2.41~ 2.55 @60”, f= 21.8 ~ 24 mm @60”
10	Lamp life	● 2500 Hours, 50% Survival Rate (Standard-Mode) ● 4000 Hours, 50% Survival Rate (ECO-Mode)
11	Offset	● 115% ± 5%
12	Video compatibility	● NTSC: NTSC M 3.58 MHz, 4.43 MHz ● PAL: PAL B/D/G/H/I/M/N, 4.43 MHz ● SECAM: SECAM B/D/G/K/K1/L, 4.25/4.4 MHz ● Component: 480i/p, 576i/p, 720p (50/60Hz), 1080i/p (50/60Hz) ● HDTV: 720p(50/60Hz), 1080i(50/60Hz),1080P(24/50/60Hz) (For EW615i/EX615i)
13	Aspect ratio	● 4:3, 16:9 I, 16:9 II, NATIVE, AUTO (For EX615/EX612/EX612i/ EX615i) ● 4:3, 16:9 or 16:10, LBX, Native, Auto(For EW615i)
14	Lamp	● 230 W OSRAM Lamp E20.8 elliptic
15	Color Wheel	● 5 Segments; RGBYW; Filter Diameter 40 mm ● R76Y32G78W98B76 ● 2x,7200 RPM

No	Item	Description
16	System Controller	● DDP2430
17	Input Connections	● VGA-in: VGA in 1 (wireless dongle, YPbPr) VGA in 2 (SCART, YPbPr) ● Composite: RCA x 1 ● S-video: Mini-DIN 4 pin x 1 ● Audio-in (Green coded port): • Audio-in 1 only (Daughter Board) (for EX612//EX612i) • Audio-in 1, 2, 3 (Daughter Board) (for EX615/EW615i) ● HDMI: HDMI v1.3 (HDCP) (for EX615/EW615i/EX615i) ● Audio-in connectivity grouping (for EX615/EW615i) • VGA-in1 -> Audio in1 • VGA-in2 -> Audio in2 • Composite/S-Vidoe -> Audio in3
18	Temperature	● Operating (Full-power-mode): 5~ 40 °C ● Non-operation (storage): -10°C~ 60°C
19	Altitude	● Operating: 0 ~ 2,500 ft, for 5°C~ 40°C 2500 ft ~ 5,000 ft, for 5°C~ 35°C 5,000 ft ~ 10,000 ft, for 5°C~ 30°C

1-2 Compatible Mode

Computer Compatibility (Analog)

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
VGA	640 x 350	70	31.5
	640 x 350	85	37.9
	640 x 400	85	37.9
	640 x 480	60	31.5
	640 x 480	72	37.9
	640 x 480	75	37.5
	640 x 480	85	43.3
	720 x 400	70	31.5
	720 x 400	85	37.9
SVGA	800 x 600	56	35.2
	800 x 600	60	37.9
	800 x 600	72	48.1
	800 x 600	75	46.9
	800 x 600	85	53.7
XGA	1024 x 768	60	48.4
	1024 x 768	70	56.5
	1024 x 768	75	60
	1024 x 768	85	68.7
WXGA	1280 x 768	60	47.8
SXGA	1152 x 864	60	53.5
	1152 x 864	70	63.8
	1152 x 864	75	67.5
	1152 x 864	85	77.1
	1280 x 1024	60	63.98
	1280 x 1024	75	79.98
	1280 x 1024	85	91.1
	1280 x 960	60	60.0
WXGA	1280 x 800	60	49.68
SXGA+	1400 x 1050	60	63.98
UXGA	1600 x 1200	60	75
MAC LC 13”	640 x 480	66.66	34.98

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
MAC II 13”	640 x 480	66.68	35
MAC 16”	832 x 624	75	49.725
MAC 19”	1024 x 768	75	60.24
MAC	1152 x 870	75	68.68
MAC G4	640 x 480	60	31.35
i Mac DV	1024 x 768	75	60
i Mac DV	1152 x 870	75	68.49
i Mac DV	1280 x 960	75	75

Computer Compatibility (Digital)

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
VGA	640 x 350	70	31.5
	640 x 350	85	37.9
	640 x 400	85	37.9
	640 x 480	60	31.5
	640 x 480	72	37.9
	640 x 480	75	37.5
	640 x 480	85	43.3
	720 x 400	70	31.5
	720 x 400	85	37.9
SVGA	800 x 600	56	35.2
	800 x 600	60	37.9
	800 x 600	72	48.1
	800 x 600	75	46.9
	800 x 600	85	53.7
XGA	1024 x 768	60	48.4
	1024 x 768	70	56.5
	1024 x 768	75	60
	1024 x 768	85	68.7
WXGA	1280 x 768	60, 75, 85	47.8
	1280 x 800	60	49.64

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
SXGA	1152 x 864	60	53.5
	1152 x 864	70	63.8
	1152 x 864	75	67.5
	1152 x 864	85	77.1
	1280 x 1024	60	63.98
	1280 x 1024	75	79.98
	1280 x 1024	85	91.1
SXGA+	1400 x 1050	60	63.98
UXGA	1600 x 1200	60	75

Note: If the Computer Compatibility supportive signal is different from User's Manual, please refer to User's Manual.

Chapter 2

Disassembly Process

2-1 Equipment Needed & Product Overview

1. Screw Bit (+): 105
2. Screw Bit (+): 107
3. Screw Bit (-): 107
4. Hex Sleeves 5 mm
5. Tweezers
6. Projector

** Before you start: This process is protective level II. Operators should wear electrostatic chains.*

** Note: - If you need to replace the Main Board, you have to record the Lamp Usage Hour.*

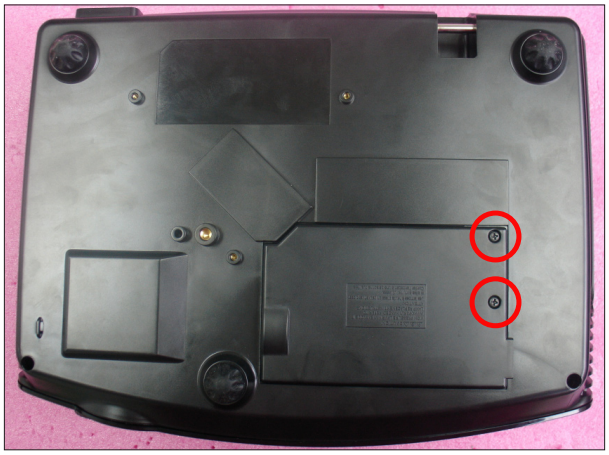
- The disassembly process for EX612/EX615/EW615i/EX612i/EX615i is the same,we take EX615 as an example here.

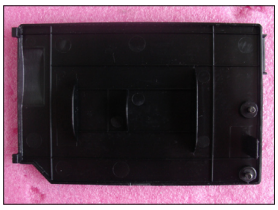





2-2 Disassemble Lamp Cover Module

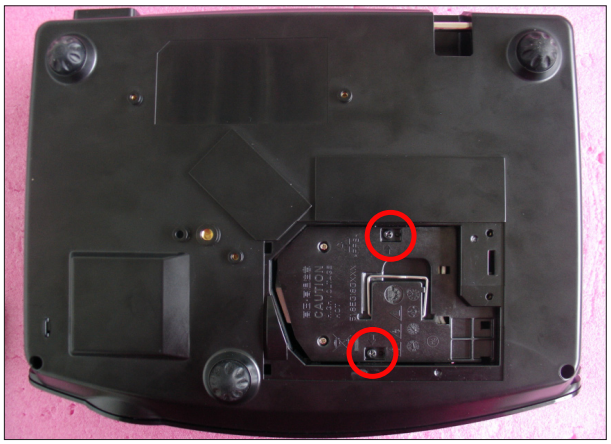
1. Loosen 2 screws (as red circle) on the Lamp Cover.
2. Disassemble the Lamp Cover Module.

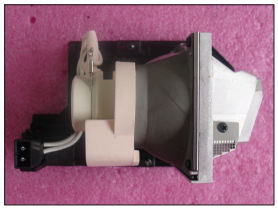




2-3 Disassemble Lamp Module

1. Loosen 2 screws (as red circle) on the Lamp Module.
2. Take off the Lamp Module.

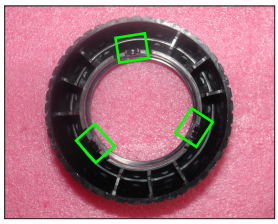


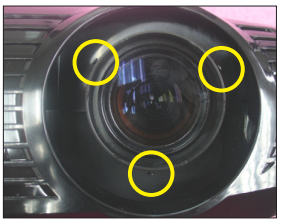


2-4 Disassemble Focus Ring

1. Rotate the Focus Ring clockwise until you cannot rotate any more (as red arrow direction).
2. Pull out the Focus Ring.

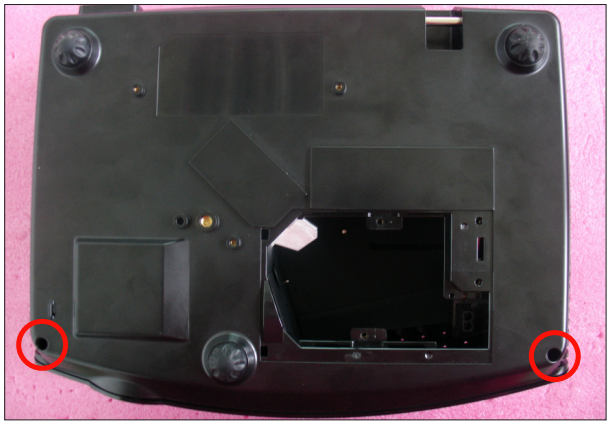
Note: - When you assemble the Focus Ring, ensure the 3 card slot (as green square) placed in the 3 double-screw bolt (as yellow circle) properly, and the Focus Ring can be well adjusted.





2-5 Disassemble Top Cover Module

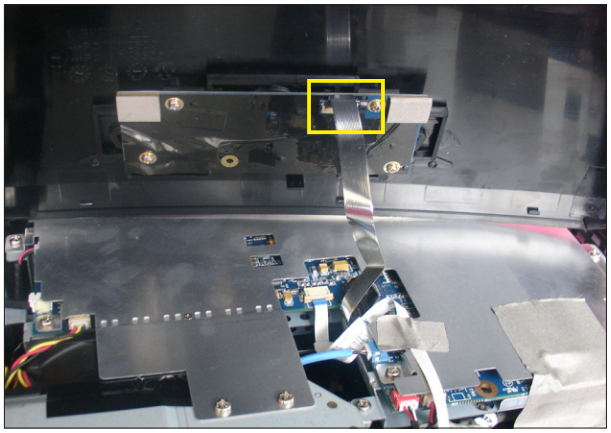
1. Unscrew 2 screws (as red circle) from the Bottom Cover.
2. Press two sides of the projector as the blue arrows point.
3. Remove the Top Cover Module.



Note: - When you remove the Top Cover, take care the connector (as yellow square) of FPC cable which connect Main Board and Keypad Board Module, then unplug it from Keypad Board Module.

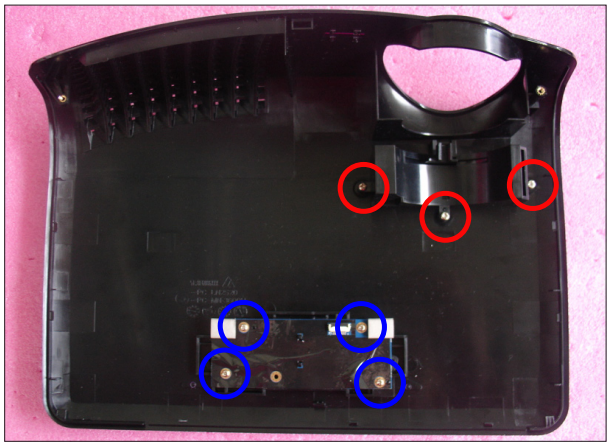
- Avoid damaging by pulling keypad FPC cable.

- Make sure the FPC cable plug into the correct ports when assembling it.



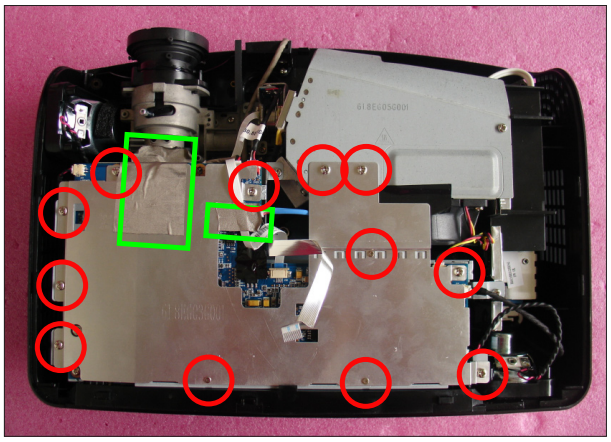
2-6 Disassemble Keypad Board Module and Zoom Ring

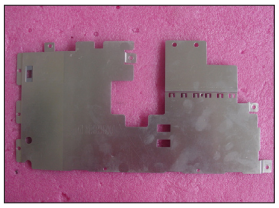
1. Unscrew 4 screws (as blue circle) to disassemble the Keypad Board Module from the Top Cover Module.
2. Separate the Keypad from the Top Cover Module.
3. Unscrew 3 screws (as red circle) to disassemble the Zoom Ring.



2-7 Disassemble Top Shielding

1. Tear off 2 EMI tapes (as green square).
2. Unscrew 12 screws (as red circle).
3. Disassemble the Top Shielding.

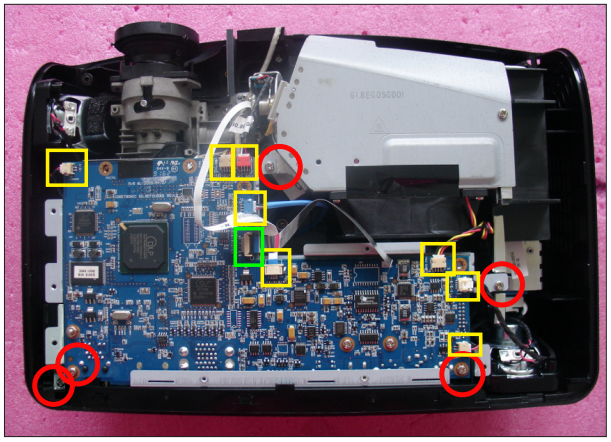


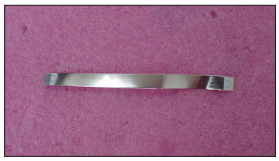


Top Shielding

2-8 Disassemble Main Board Module

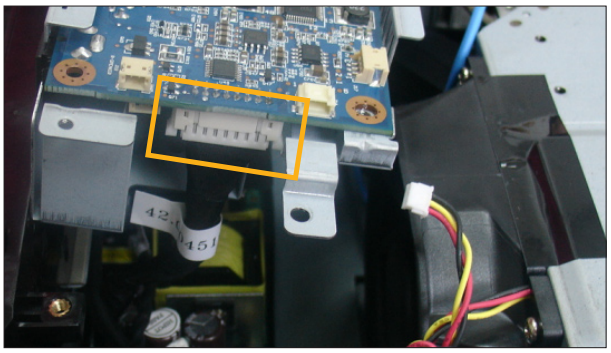
1. Unplug 1 connector (as green square) to remove the FPC cable.
2. Unplug 8 connectors (as yellow square).
3. Unscrew 5 screws (as red circle) from the Main Board Module.





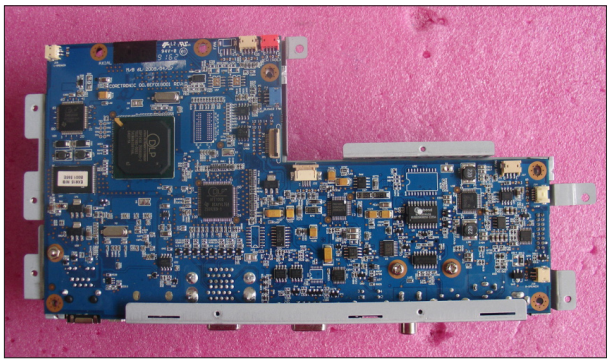
FPC cable

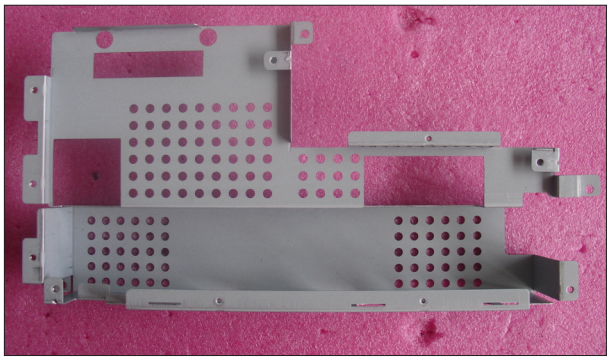
4. Unscrew 1 screw (as blue circle) from the IO Cover.
5. Unscrew 8 hex screws (as green circle) from the IO Cover.
6. Unplug 1 connector (as orange square).



7. Separate the Main Board Module and Main Board Shielding.

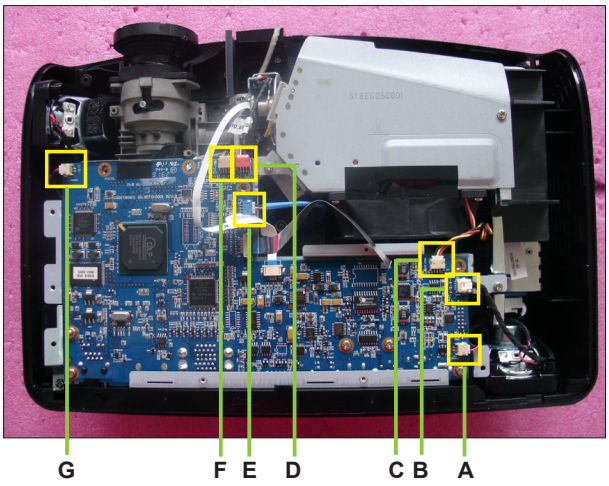
Note: - Make sure cables plug into the correct ports when assembling the unit.

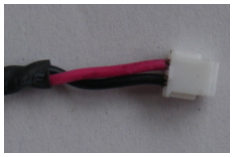
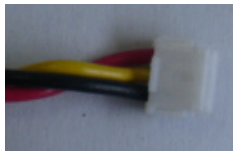
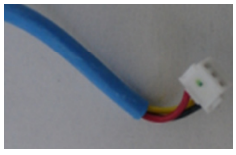




Main Board Shielding

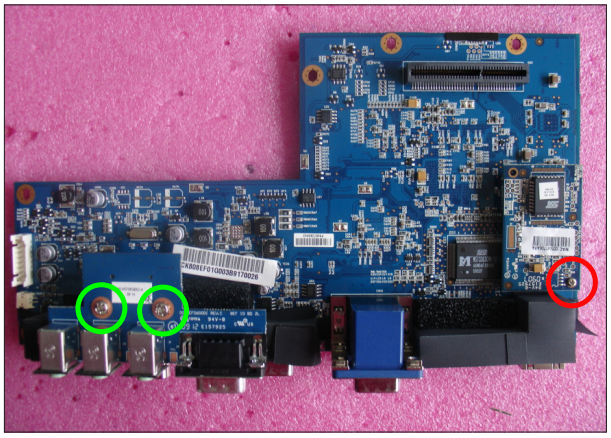
Please refer to the table as below for details of each connector.

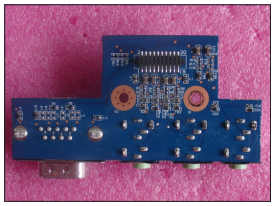


Item	Male Connector on Main Board	The key feature	Figure
A & G	Speaker	Compose of Red/Black Wire and Black wire tube (2 pin)	
B	Lamp Driver	Black wire tube (5 pin)	
C	System Fan	Compose of Red/Yellow/Black Wire (3 pin)	
D	Photo Sensor	Compose of Red/Black/White Wire and Black wire tube (3 pin)	
E	Blower	Compose of Black/Yellow/Red Wire and Blue wire tube (3 pin)	
F	IR	Compose of Black/Yellow/Red Wire and Gray wire tube (3 pin)	

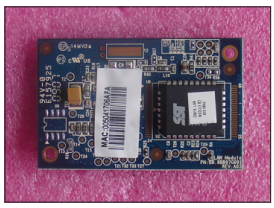
2-9 Disassemble Daughter Board and Lan Module Board

1. Unscrew 2 screws (as green circle) to disassemble the Daughter Board.
2. Unscrew 1 screw (as red circle) to disassemble the Lan Module Board.





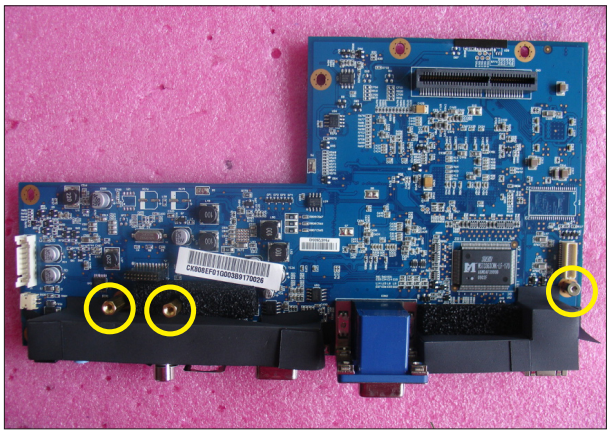
Daughter Board

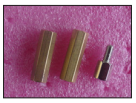


Lan Module Board

3. Unscrew 3 hex screws (as yellow circle) from the Main Board Module.

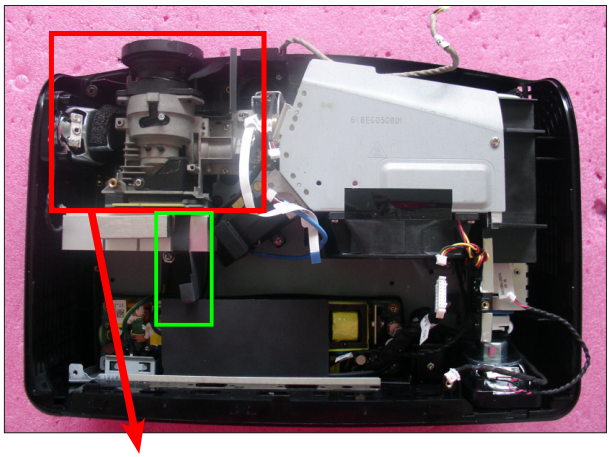
Note: EX612/EX612i has not Lan Module Board,so disassemble Lan Module Board is for EX615/EW615i/EX615i.

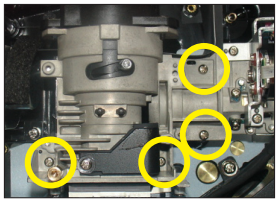


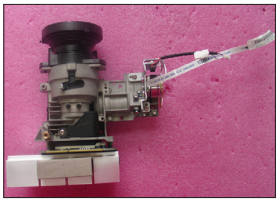


2-10 Disassemble Engine Module

1. Tear off the black mylar (as green square).
2. Unscrew 4 screws (as yellow circle) to disassemble the Engine Module.



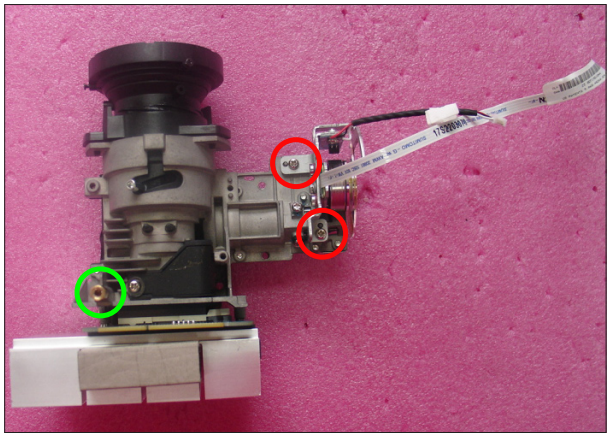


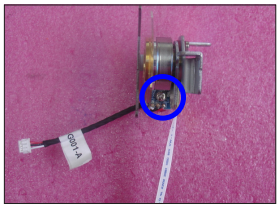


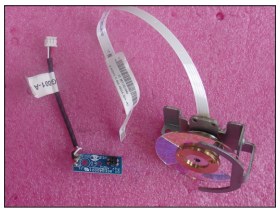
2-11 Disassemble Color Wheel Module

1. Unscrew 2 screws (as red circle) to disassemble the Color Wheel Module.
2. Unscrew 1 hex screw (as green circle).
3. Unscrew 1 screw (as blue circle) to disassemble the Photo Sensor Board from the Color Wheel Module.

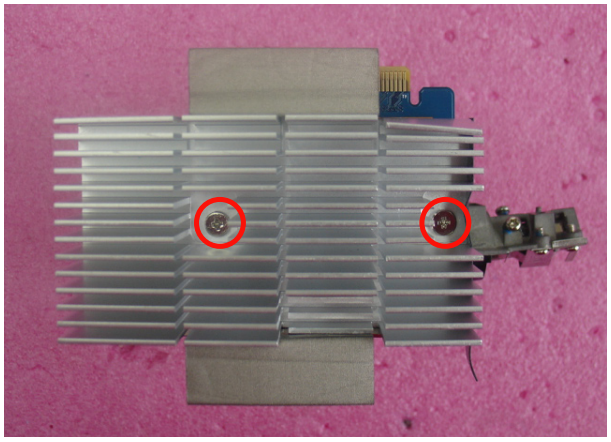
Note: - Avoid touching the glass parts of color wheel.







2-12 Disassemble DMD Chip and DMD Board

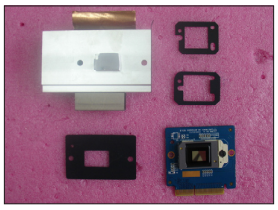


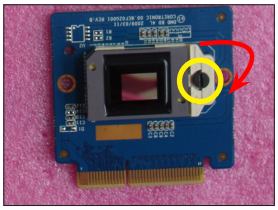
1. Unscrew 2 screws (as red circle) to disassemble the Heat Sink and DMD Module.
2. Rotate the screw (as yellow circle) clockwise to disassemble the DMD Board and DMD Chip.

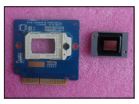
Note: - Avoid touching the DMD Chip when you disassemble it.

- Found that the DMD Chip has scrapes or dirt use of a magnifying glass, you may use an electrostatic ion gun to clean it.

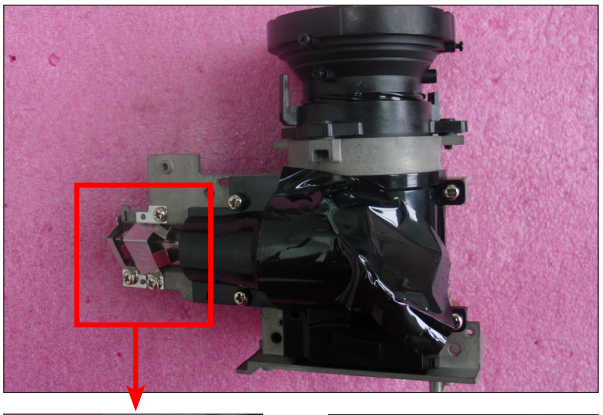
- Pay attention to the fixed position when assembling the DMD Chip.







2-13 Disassemble Rod Module



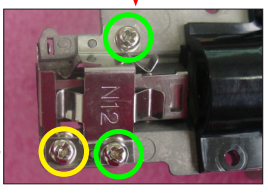
1. Unscrew 2 screws (as green circle) to take off the Rod Spring.
2. Unscrew 1 screw (as yellow circle) to take off the Rod Cover.
3. Remove the Rod.

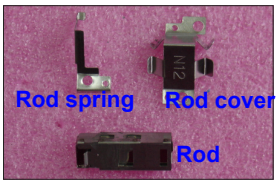
Note: - Avoid touching the Rod when you disassemble or assemble it.

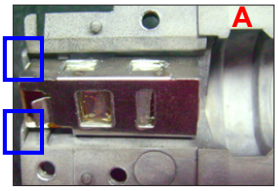
- Please notice the Rod Module's direction when you assemble it (as picture A shown).

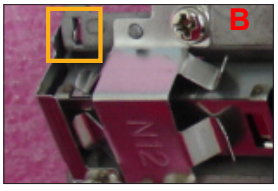
- Ensure left edge of Rod Module contact with the Engine base's blocks.

- Rod Spring must hook in the position as picture B shown.



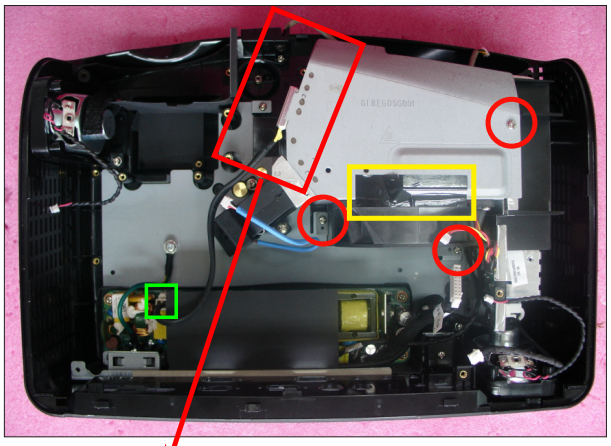


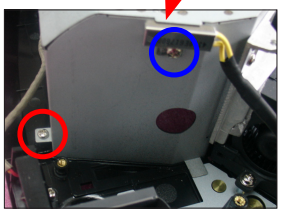




2-14 Disassemble System Fan Module and Thermal Switch

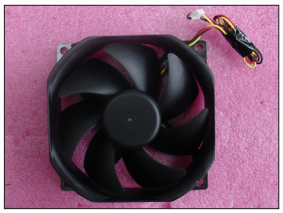
1. Tear off the black tape (as yellow square).
2. Unscrew 4 screws (as red circle) to disassemble the System Fan Module.
3. Unscrew 1 screw (as blue circle) and unplug 1 connector (as green square) to disassemble the Thermal Switch.





Thermal Switch

4. Unscrew 4 screws (as green circle) to separate Fan and Fan Shielding.



Fan Shielding

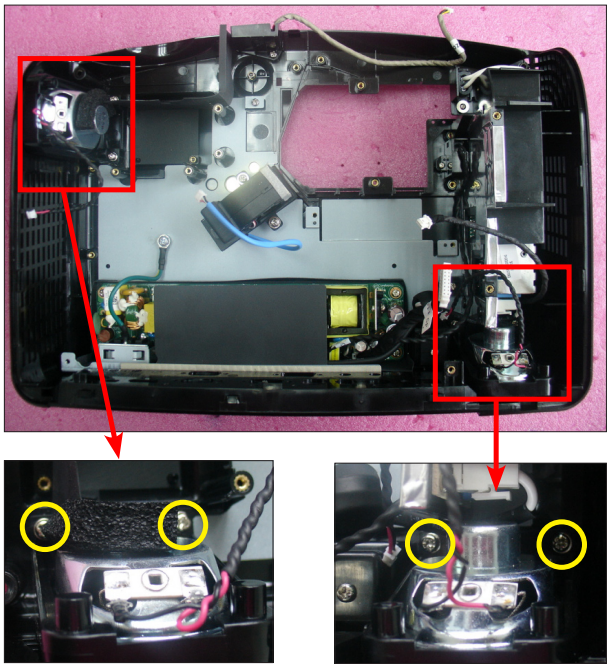
Note: - Take the Fan Module as the right gesture.

the right gesture

the wrong gesture

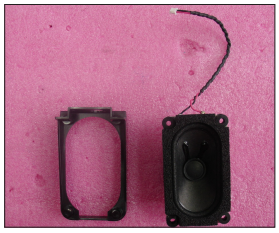
2-15 Disassemble Speakers

1. Unscrew 4 screws (as yellow circle) to disassemble the two Speakers.



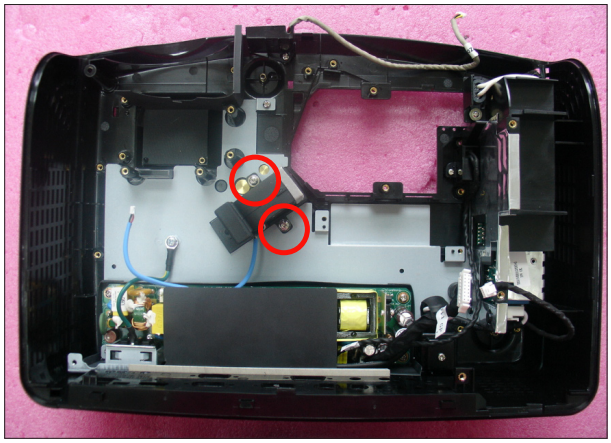
2. Unscrew 4 screws (as red circle) to separate the Speaker Holder and Speaker.

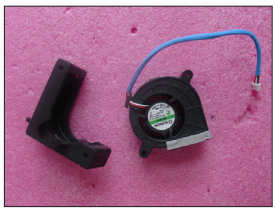
(Same procedure for the other Speaker)

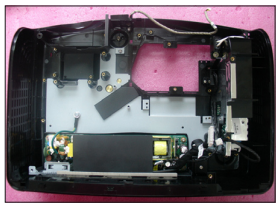


2-16 Disassemble Blower

1. Unscrew 2 screws (as red circle) to disassemble the Blower Module.
2. Separate Blower and Blower Rubber.

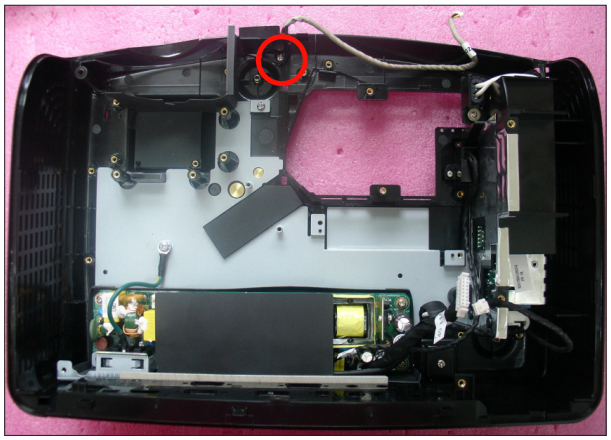


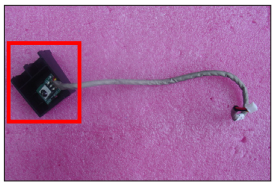


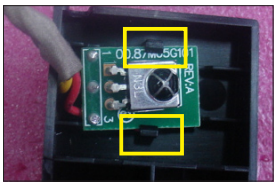


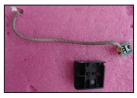
2-17 Disassemble Front IR Module

1. Unscrew 1 screw (as red circle) to disassemble the Front IR Module.
2. Unfasten 2 tenons (as yellow square) to separate the IR Board and IR Holder.



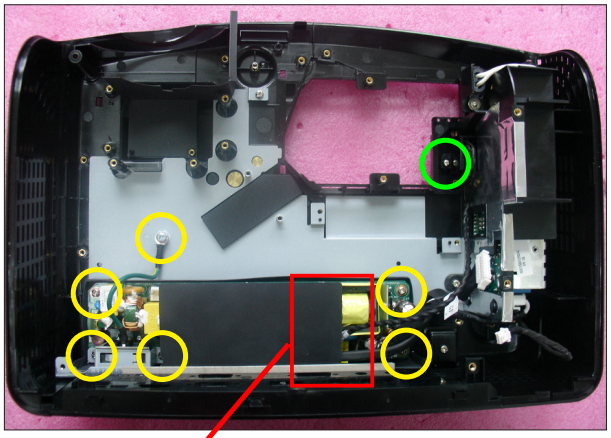


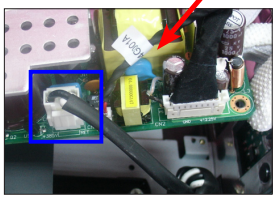


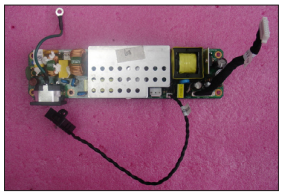


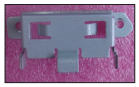
2-18 Disassemble LVPS Module and Interlock Switch

1. Unscrew 6 screws (as yellow circle).
2. Unplug 1 connector (as blue square).
3. Disassemble the LVPS Module, the AC Inlet Bracket and Mylar.
4. Unscrew 1 screw (as green circle).



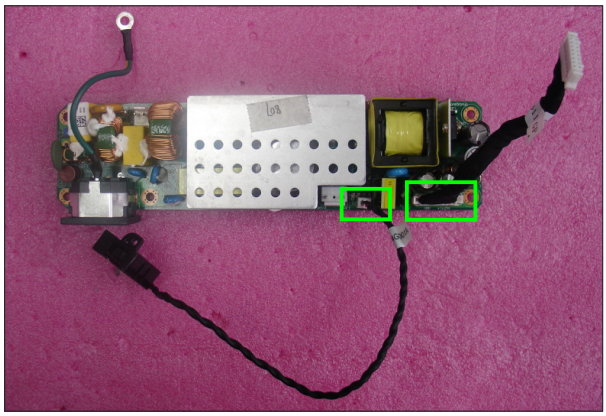






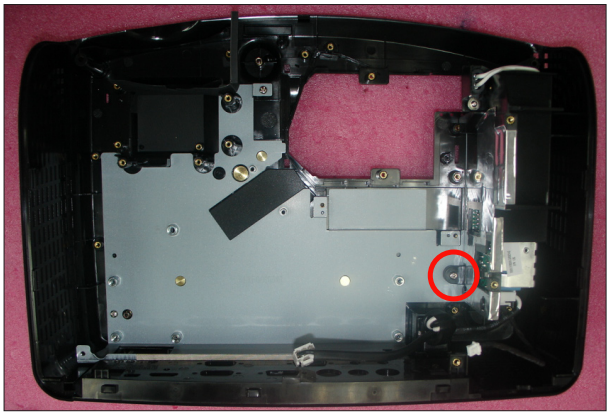
AC Inlet Bracket

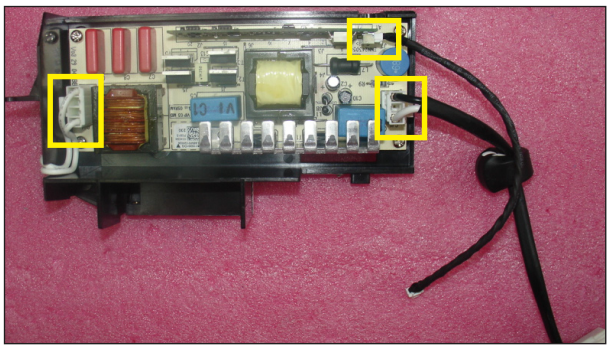
5. Unplug 2 connectors (as green square).
6. Disassemble the Interlock Switch and the cable from the LVPS Module.



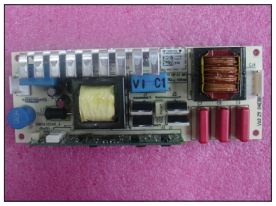
2-19 Disassemble Lamp Driver Module

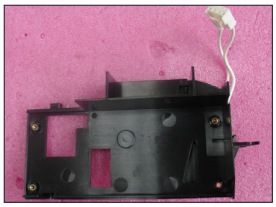
1. Unscrew 1 screw (as red circle) to disassemble the Lamp Driver Module.
2. Unplug 3 connectors (as yellow square).





3. Separate the Lamp Driver Module and Lamp Driver Holder.

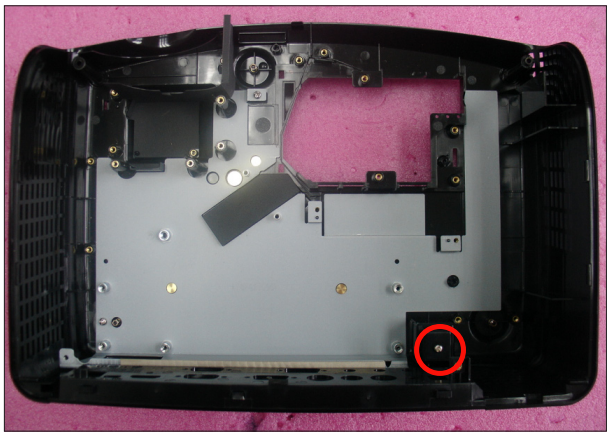




Lamp Driver Holder

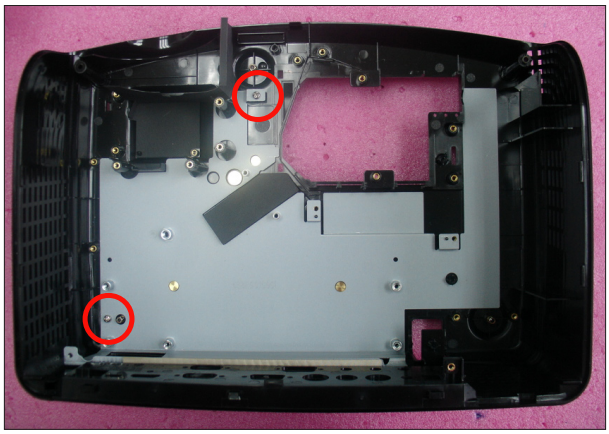
2-20 Disassemble Security Bar Cap

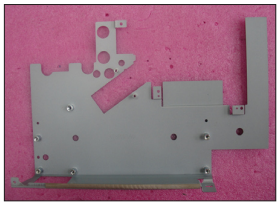
1. Unscrew 1 screw (as red circle) to disassemble the Security Bar Cap and Security Bar.

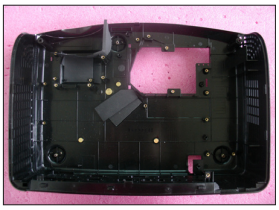


2-21 Disassemble Bottom Shielding

1. Unscrew 2 screws (as red cricle) to disassemble the Bottom Shielding.

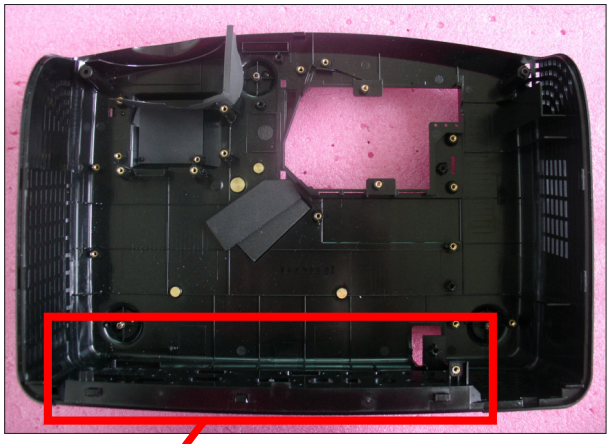


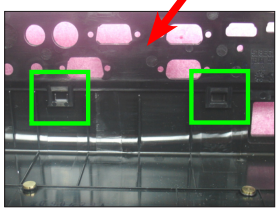




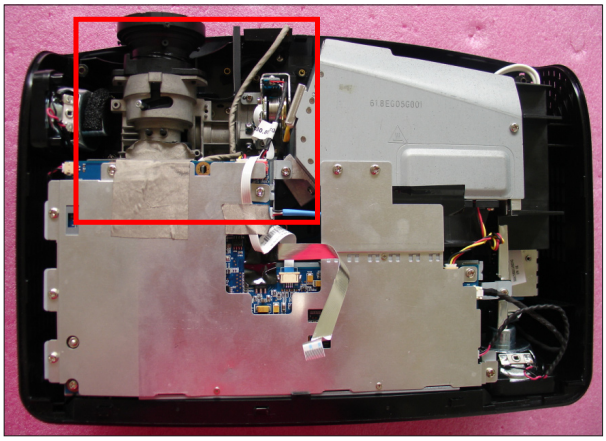
2-22 Disassemble IO Cover

1. Unfasten 2 tenons (as green square).
2. Remove the IO Cover.





2-23 Rod Adjustment



1. Environment Adjustment

   - The distance between the engine and the screen is 1.95 M.

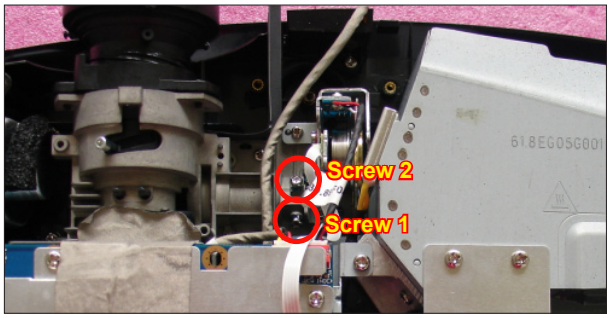
   - This process should be done at a dark environment (under 10 Lux).

2. Procedure Adjustment

   - Change the screen to "white screen".

   - Adjust the screws by using the rod on the engine module to readjust the image.

     ("screw 1" should be adjusted first, and then "screw 2". Adjust until the yellowish or bluish parts disappeared.)



3. Abnormal image inspection

   - It should not have any abnormal color at the rim of the image by estimating through the eyes.

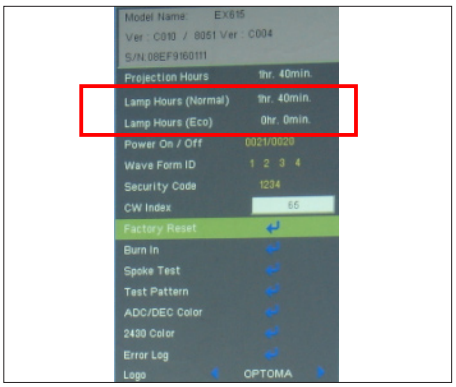
Z type driver

Note: - To avoid over adjusting the rod.

- After the opreation, please use the glue to fix the screws.

- Please use Z type driver to adjust Rod screw 1.

2-24 Re-write Lamp Usage Hour



1. Get into Service Mode

   - Press "Power", "Left", "Left" and "Menu" buttons sequentially to get into Service Mode.

2. Re-write Projection Hours

   - Use "up" or "down" buttons to select "Projection Hours", then use "left" or "right" buttons to re-write the Projection Hours.

3. Re-write Lamp Hours (Normal)

   - Use "up" or "down" buttons to select "Lamp Hours(Normal)", then use "left" or "right" buttons to re-write the Lamp Hours(Normal).

4. Re-write Lamp Hours (ECO)

   - The way of re-write "Lamp Hours (ECO)" is the same as "Lamp Hours(Normal)".

5. Exit Service Mode

   - Use "up" or "down" buttons to select "Exit", then press "Enter" to exit the Service Mode.

Note: left key = decrease lamp hour
right key =increase lamp hour

Chapter 3

Trobleshooting

3-1 LED Lighting Message

Message	ON/STANDBY LED (Amber/Green)	Temp LED (Red)	Lamp LED (Red)
Standby State (Input power cord)	✱ (Amber)	O	O
Power on (Warming)	Flashing (Green)	O	O
Power on and Lamp lighting	✱ (Green)	O	O
Power off (Cooling)	Flashing (Green)	O	O
Error (Lamp failed)	Flashing (Amber)	O	✱ (Red)
Error (Fan failed)	Flashing (Amber)	Flashing (Red)	O
Error (Over Temp.)	Flashing (Amber)	✱ (Red)	O

Note: ✱ *Steady light* O *No light*

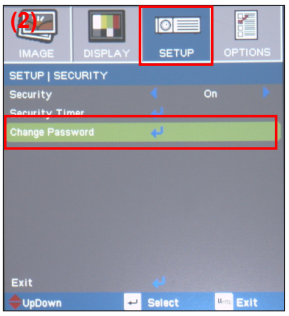
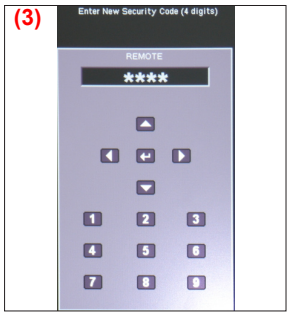
3-2 Main Procedure

No	Symptom	Procedure
1	No Power	- Ensure the Power Cord and AC Power Outlet are securely connected - Ensure all connectors are securely connected and aren't broken - Check LVPS - Check Lamp Driver - Check Main Board
2	Auto Shut Down	- Check LED status a. Lamp Fail: ON/STANDBY LED (flashes amber); Lamp LED (lights red) - Check Lamp - Check Lamp Driver - Check Main Board - Check Color Wheel - Check Photo Sensor - Check whether Wireless status of OSD Menu is on (connect VGA1- IN port with VGA source) b. Over Temp.: ON/STANDBY LED (flashes amber); Temp LED (lights red) - Check Thermal Switch - Check Fan - Check Main Board c. Fan Fail: ON/STANDBY LED (flashes amber); Temp LED (Flashes red) - Check Fan - Check Main Board

No	Symptom	Procedure
3	No Light On	- Ensure all connectors are securely connected and aren't broken - Check Lamp Cover, Interrupt Switch - Check Lamp Module - Check Lamp Driver - Check LVPS - Check Main Board - Check Color Wheel - Check Photo Sensor Board
4	No Image	- Ensure the Signal Cable and Source work (If you connect multiple sources at the same time, use the "Source" button switch) - Ensure all connectors are securely connected and aren't broken - Check Main Board - Check DMD Board - Check DMD Chip - Check Color Wheel - Check Engine Module
5	Mechanical Noise	- Check Color Wheel - Check Fan Module
6	Line Bar/Line Defect	- Check whether the Main Board and the DMD Board are assembled properly - Check Main Board - Check DMD Board - Check DMD Chip

No	Symptom	Procedure
7	Image Flicker	- Do "Reset (All data)" of the OSD Menu - Ensure that the signal cables and source are work as well - Check Lamp Driver and waveform - Check Lamp Module - Check Color Wheel - Check Photo Sensor and clean Photo Sensor - Check DMD Board - Check Main Board
8	Color Abnormal	- Do "Reset (All data)" of the OSD Menu - Adjust Color Wheel Index - Check Main Board - Check DMD Board - Check Color Wheel
9	Poor Uniformity/ Shadow	- Ensure the projection screen without dirt - Ensure the projection lens is clean - Ensure the Brightness is within spec. - Check rod alignment - Check Engine Module
10	Dead Pixel/Dust (Out of spec.)	- Ensure the projection screen without dirt - Ensure the projection lens is clean - Clean DMD Chip and Engine Module - Check DMD Chip - Check Engine Module
11	Garbage Image	- Ensure that the signal cables and source work as well - Check Main Board - Check DMD Board

No	Symptom	Procedure
12	Remote Controller/Control Panel Failed	- Remote Controller a. Check Battery b. Check Remote Controller c. Check IR Sensor Board d. Check Main Board - Control Panel a. Check FPC b. Check Keypad c. Check Main Board
13	Function Abnormal	- Do "Reset (All data)" of the OSD Menu - Check Main Board - Check DMD Board
14	Audio Abnormal	- Ensure that the signal cables and source are work as well - Ensure that your Projector is not in “Mute” mode - Check the interior Speakers of the projector - Check the exterior Speaker that you are using - Check Main Board - Check Daughter Board
15	Network Fail (For EX615/EW615i/ EX615i)	- Ensure you have set up the right IP address and the connection is OK (Network green LED should light up) - Check Lan Module Board - Check Main Board
16	3D Image Abnormal (For EX615/EW615i/ EX615i)	- Ensure the using 3D glasses is good and you must face the projection. - Ensure the CD in DVD is HQFS format or the graphic card from PC can support 3D format. - Ensure your standing distance is less than 6m from screen. - Ensure the 3D function is on and execute “3D sync invert” in OSD menu. - Check main board.

No	Symptom	Procedure
17	Forgetting Password (Administrator Password)	- If you forget the Password, please do the following steps to get the Universal Password: (1) When you turn on the projector, the message "Enter Security Code" appears. Please Input the "Current Security Code 8642" by Remote Control, then press "Enter". (2) Press "Menu" button, select "Setup", "Change Password", then press "Enter" button. The message "Enter Security Code" appears again, repeat step (1). (3) The message "Enter New Security Code" appears. Input a 4-digits code (letters and/or numbers) that you define. (4) To confirm, key in the password again. The "Security Code change successfully" appear on the screen.   

Chapter 4

Function Test & Alignment Procedure

4-1 Test Equipment Needed

- IBM PC with XGA resolution
- DVD player with Multi-system, equipped “Component”, “S-Video”,“Composite” and "HDMI".
- HDTV Source (720P,1080P,1080i)
- Minolta CL-100
- Quantum Data 802B or CHROMA2327 (Color Video Signal & Pattern Generator)

4-2 Service Mode

- EX612/EX615/EW615i/EX612i/EX615i have two kinds of Service Mode,use different ways to get into each Service Mode:

1. Turn on the projector
2. (1) Press "Power", "Left", "Left" and "Menu" buttons sequentially to get into Service Mode 1.
   (2) Press "Power", "Up", "Down" and "Menu" buttons sequentially to get into Service Mode 2.
   (3) Select "Exit" to leave the Service Mode after confirming the configuration.

4-3 OSD Reset

- After final QC step, we have to erase all saved change again and restore the OSD default setting. The following actions will allow you to erase all end-users' settings and restore the default setting:

1. Please get into OSD menu.
2. Execute "Reset" function.

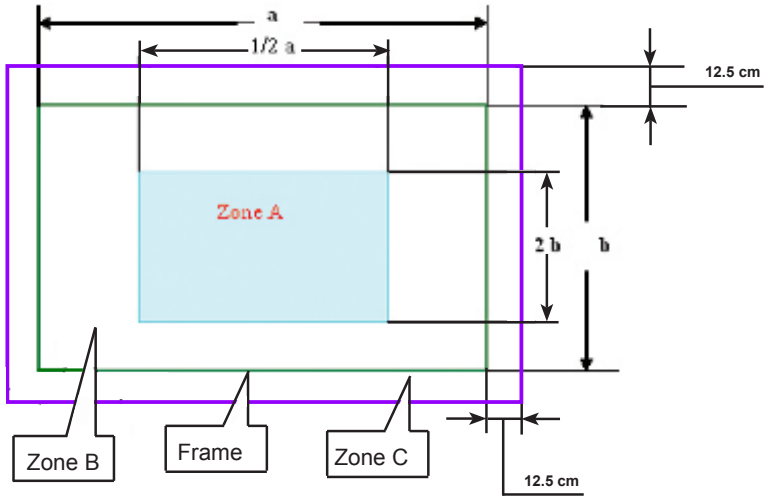
4-4 Test Condition

4-4-1 Normal Test Condition

- Circumstance brightness: Dark room less than 10.0 lux

- Screen size: 60 inches

Screen Defects (While replacing DMD Chip, DMD Board and Main Board)



< Figure: Zone A, Zone B & Frame(as green line) Definition, Active area=Zone A+ Zone B >

Defect specification table
For EX615/EX612/EX612i/EX615i

Order	Symptom	Pattern	Criteria
1	Bright pixel (dots)	Gray 10 pattern	A+B=0
2	Dark pixel(dots)	White pattern	A+B≤4
3	Unstable pixel (dots)	Any pattern	A+B=0
4	Adjacent dark pixel (dots)	Any pattern	A+B=0
5	Dark blemish (Dirty)	Blue 60 pattern	A+B≤4 (diameter <1/2 inch)
6	Bright blemish (Dirty)	Gray 10 pattern	A+B≤4 (diameter <1/2 inch)
7	Bright dots on frame	Gray 10 pattern	≤1

For EW615i

Order	Symptom	Pattern	Criteria
1	Bright pixel (dots)	Gray 10 pattern	A+B=0
2	Dark pixel(dots)	White pattern	A+B≤7
3	Unstable pixel (dots)	Any pattern	A+B=0
4	Adjacent dark pixel (dots)	Any pattern	A+B=0
5	Dark blemish (Dirty)	Blue 60 pattern	A+B≤4 (diameter <1/2 inch)
6	Bright blemish (Dirty)	Gray 10 pattern	A+B≤4 (diameter <1/2 inch)
7	Bright dots on frame	Gray 10 pattern	≤1

4-4-2 Burning Test

- Temperature: 15°C~35°C

- Circumstance brightness: Normal environment

- Screen size: No concern

- Display mode: ECO mode

After repairing each unit, it should be Burn-in (refer to the below table).

Symptom	Burn-in Time
Normal repair	2 hours
NFF	4 hours
Auto shut down	6 hours

- Get into Burn-In Mode

** Cycle setting is based on the defect symptoms. ie: If it is NFF, the burn-in time is 4 hours. You have to set the lamp on for 50 min. and lamp off for 10 min for 4 cycles.*

Press Power > Left > Left > Menu to get into service mode 1	
Choose Burn-In Test > enter	
Lamp On (Mins)	Press right key to adjust the time (50)
Lamp Off (Mins)	Press right key to adjust the time (10)
Burn in cycle	Press right key to adjust the cycle
After setting up the time, choose "Enter to Burn-In" and press Enter button	

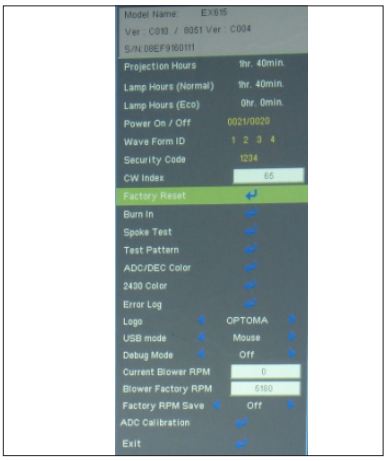
4-5 Test Inspection Procedure

Update	Change parts						
	Main Board	Firmware	Color Wheel	Lamp Module	Engine Module	Lan Module (for EX615/ EX615i/ EW615i)	Blower
Version Update	v	v				v	
Color Wheel Index	v		v				
ADC Calibration (RGB/ Video Calibration)	v						
Reset lamp hour				v			
OSD Reset	v	v					
EDID	v						
Re-write Lamp Hour Usage	v						
Rod adjustment					v		
Factory RPM Save	v						v

Note: - If Color appears abnormal after changing Main Board/Color Wheel Module, please do Color Wheel index adjustment.

- After changing parts, check the information above.

4-6 Factory Fan RPM Reset



After replace main board, blower or upgrade FW, you need to do as below:

1. Turn on the projector, after about 30 seconds, press“Power”, “Left”, “Left” and “Menu” button sequentially to get into service mode1, press right key to change the “Factory RPM Save” status to “On”.The “Current Blower RPM” will be saved after 3 seconds and “Factory RPM Save”status change to “Off” automatically.

Note:

If the Blower Factory RPM is not between 4292~5454,please change blower or main board.

4-7 PC MODE

Note: - When getting into function test, adjust the zoom ring and focus ring to guarantee the image maximum and clearest, then start to test.

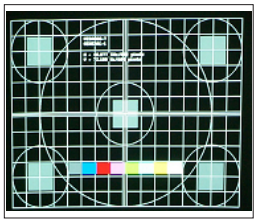
- Test signal: analog 1024 x 768

- we take EX615 for example here, others model please refer to 4-5 for details.

1. Frequency and tracking boundary

Procedure

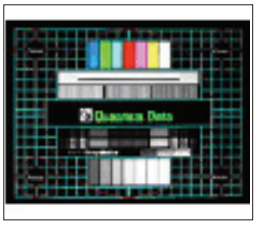
- Test equipment: video generator
- Test signal: analog 1024 x 768@60Hz
- Test Pattern: General-1 or Master
- Check and see if the image sharpness is well performed.
- If not, re-adjust by the following steps:
  (1) Select "Frequency" function to adjust the total pixel number of pixel clock in one line period.
  (2) Select "Tracking" function and use right or left arrow key to adjust the value to minimize video flicker.
- Adjust Resync or Frequency/Tracking/H. Position/V. Position to the inner screen.



General-1

Inspection item

- Eliminate visual wavy noise by Resync, Frequency or Tracking selection.
- Check if there is noise on the screen.
- Horizontal and vertical position of the video should be adjustable to the screen frame.



Master

Criteria

- If there is noise on the screen, the product is considered as failure product.
- If there is noise on the screen, use auto or manual “frequency” function or “tracking” function to adjust the screen.
- The PC mode functionally sure be workable include support format with frequency and auto detected functional will be workable.

2.Bright pixel

Procedure
- Test equipment: video generator.
- Test signal: analog 1024x768@60Hz.
- Test Pattern: Gray 10

Inspection item
- Bright pixel check.

Criteria
- Bright pixel is unacceptable under gray 10 pattern.

Please refer to the figure in 4-4 Test Condition for Frame and Active area.

Note: The defect criteria follows TI specification.

Gray 10

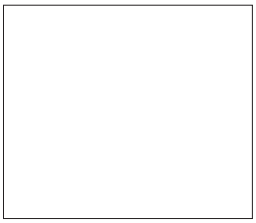
3. Dark pixel

Procedure
- Test equipment: video generator.
- Test signal: analog 1024x768@60Hz.
- Test Pattern: White pattern

Inspection item
- Dark pixels check.
- White pattern
- Adjacent dark pixel.

Criteria
- The number of the dead pixels should be less or equal to 4 pixels.
- Adjacent pixel with each other is unacceptable.

Note: The defect criteria follows TI specification.



White pattern

4. Bright Blemish

Procedure	- Test equipment: video generator - Test signal: 1024x768 @60Hz - Test Pattern: Gray 10
Inspection item	- Bright blemish check
Criteria	- The bright blemish should be less or equal to 4 under gray 10 pattern. *Note: The defect criteria follows TI specification.*

Gray 10

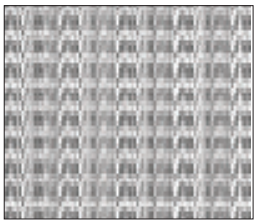
5. Dark Blemish

Procedure	- Test equipment: video generator - Test signal: 1024x768 @60Hz - Test Pattern: Blue 60
Inspection item	- Dark blemish check
Criteria	- The dark blemish should be less or equal to 4 under blue 60 pattern. *Note: The defect criteria follows TI specification.*

Blue 60

6. Focus test

Procedure	- Test equipment: video generator. - Test signal: analog 1024 x 768@60Hz - Test Pattern: full screen or MEME Sony
Inspection item	- Focus check
Criteria	- From screen 2.38 Mvia visual to check the focus, look at the entire screen, focus shall be clear, crisp, and sharp over the entire surface of the display pattern.(Blur word on one of the corner after adjustment is acceptable. However, the word should at least be recognizable.)

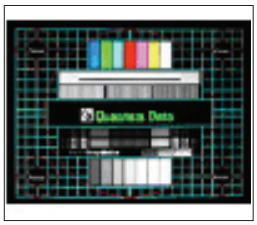


Full screen

7. Color performance

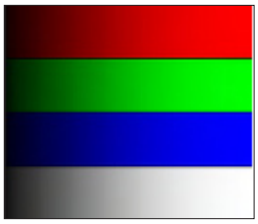
Procedure
- Test equipment: video generator.
- Test signal: 720p, 1080i, 1080p
- Test Pattern: Master, 64 gray RGBW or SMPTE bar

* Please refer to 4-2 to get into service mode 1. Use 720p & 1080p signal, master pattern to do HDTV test. Color cannot discolor to purple and blue.



Master

Inspection item
- Check if each color level is well-functioned.
- Color saturation



64 gray RGBW

Criteria
- Screen appears normal. It should not have any abnormal condition, such as lines appear on the screen and so on.
- Color appears normal.
- It is unacceptable to have few lines flashing.
- RGBW should all appear normal on the screen and sort from R-G-B-W.
- Color levels should be sufficient and normal. (The unidentified color levels on both left and right sides should not over 4 color levels.)
- Gray level should not have abnormal color or heavy lines.
- If color appears abnormal, please get into service mode 1 to do color wheel index adjustment.

SMPTE BAR

4-9 Video Performance

1. CVBS

Procedure
- Test equipment: DVD player
- Test signal: CVBS

Inspection item
- Video performance test

Inspection Distance
- 1.8 M ~2.5 M

Motion video

Criteria	- Check any abnormal color, line distortion or any noise on the screen. - Check the sound from speakers. - Check whether "freeze" and "mute" are normal. - Press "V Keystone" on remote controller, check whether keystone function is normal.

2. S-Video

Procedure	- Test equipment: DVD player - Test signal: S-Video
Inspection item	- Video performance test
Inspection Distance	- 1.8 M ~2.5 M
Criteria	- Check any abnormal color, line distortion or any noise on the screen. - Check the sound from speakers. - Check whether "freeze" and "mute" are normal. - Press "V Keystone" on remote controller, check whether keystone function is normal.

3. HDTV/Component

Procedure	- Test equipment:DVD player - Test signal:Ycbcr/YPbPr
Inspection item	- HDTV performance test
Inspection Distance	- 1.8 M ~2.5 M
Criteria	- Check any abnormal color, line distortion or any noise on the screen. - Check the sound from speakers. - Check whether "freeze" and "mute" are normal. - Press "V Keystone" on remote controller, check whether keystone function is normal.

4. HDMI Test (not for EX612/EX612i)

Procedure	- Test equipment: DVD Player with HDMI output.
	- Test signal: 720p, 1080p, 1080i
Inspection item	- HDMI performance test.
Inspection Distance	- 1.8 M ~2.5 M.
Criteria	- Ensure the image is well performed and the color can not discolor.
	- Check whether "mute" is normal.

5. Audio Test

Procedure	- Test equipment: DVD Player
	- Test signal: CVBS
Inspection item	- Audio performance test
Inspection Distance	- 1.8 M ~2.5 M
Criteria	- Check the sound from speakers
	- Plug Audio cable into Audio in 1 port, check whether "Volume" is normal.
	- Plug Audio cable into Audio Out port, check whether the outboard speaker's "Volume" is normal.
	- Adjust the volume to "5→10" by using the remote controller.
	- Check the sound from speakers.
	- Check whether the "mute" is normal.
	Note: EX615 has 3 Audio. In ports for different input signals. To test each Audio In port, make sure input its correspondent signal.

6. 3D Test

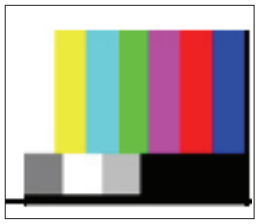
Procedure	- Test equipment: 1. DVD Player & HQFS format CD or 2. PC with 3D Graphic card - Test signal: 1280X720@120Hz (HQFS format CD)
Inspection item	- 3D test
Inspection Distance	- 5M
Criteria	- The image should not appear noise, flicker, shadow, shocking, abnormal color.

4-10 ADC Calibration

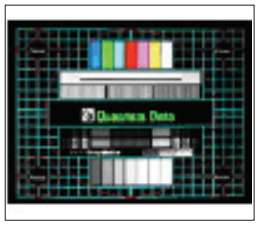
1. Video Calibration

Procedure

- Test equipment: video generator
- Once Main Board is changed, video calibration should be done as well.
  (1) Test signal: 480i
  (2) Test Pattern: SMPTE BAR
- *Note*
  (1) Calibration pattern should be in full screen mode.
  (2) Please refer to 4-2 Guide to get into service mode 1 and choose "ADC calibration".
  (3) Choose and get into "Video Calibration", press "Enter" button to execute "Video Calibration". When the message "Success" appears, it means "Video Calibration" is OK. Choose "Menu" or "Exit" to leave service mode 1.



SMPTE BAR



Master

Check pattern

- Test signal: 576p, 720p, 1080i
- Test pattern: Master
  * After finishing Video adjustment, check Master pattern.

Inspection item

- Color saturation

Criteria

- There should not have any lack of SMPTE BAR.
- The screen appears normal, it shouldn't appear any abnormal condition, such as lines and so on.
- It is unacceptable that the color appears abnormal and flashing.

2. RGB Calibration

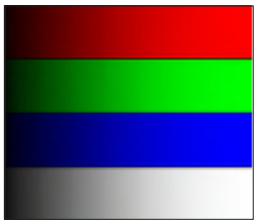
Procedure

- Test equipment: video generator
- Once Main Board is changed, RGB calibration should be done as well.
  (1) Test signal: 1024 x 768@60Hz
  (2) Test Pattern: White/Black
- *Note*
  (1) Calibration pattern should be in full screen mode.
  (2) Please refer to 4-2 Guide to get into service mode 1 and choose "RGB calibration".
  (3) Choose and get into "Video Calibration", press "Enter" button to execute "RGB Calibration". When the message "Success" appears, it means "RGB Calibration" is OK. Choose "Menu" or "Exit" to leave service mode 1.

White/Black

Check pattern

- Test signal: 1024 x 768@60Hz
- Test pattern: 64 grey RGBW
  * After finishing RGB adjustment, check 64 gray RGBW pattern.



64 gray RGBW

Inspection item

- Color saturation

Criteria

- There should not have any lack of 64 gray RGBW pattern.
- The screen appears normal, it shouldn't appear any abnormal condition, such as lines and so on.
- The color should appear normal and sort in right order, it is unacceptable that the color appears abnormal and flashing.
- Color levels should be sufficient and normal. (the unidentified color levels on both left and right sides should not over 8 color levels.)

4-11 Optical Performance Measure

Inspection Condition
- Environment luminance: 10.0 Lux
- Product must be warmed up for 5 minutes
- Distances from the screen: 1.95 M
- Screen Size: 60 inches diagonal

1. Test equipment

Procedure
- Press "Power→ Left→ Left→ Menu" to get into service mode 1.
- Select "Spoke Test"

2. Brightness

Procedure
- Full white pattern
- Use CL100 to measure brightness values of P1~P9.
- Follow the brightness formula to calculate brightness values.

☼ Brightness Formula

Avg. (P1~P9)*1.1m^2

Criteria
• 1400 ANSI lumen

3. Full On/Full Off Contrast

Procedure
- Full white pattern & Full black pattern
- Use CL100 to measure brightness values of full white pattern P5 & full black pattern B5
- Follow Contrast formula to calculate contrast values.

☼ Contrast Formula

P5/B5

Note: P5=center of white image

B5 = the center of black image.

Full black pattern

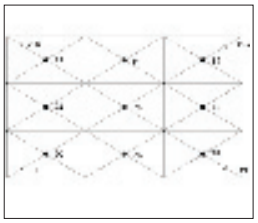
Criteria
• 1600:1

4. Uniformity

Procedure
- Full white pattern
- Use CL100 to measure brightness values of P1~P9 (see image: Full white).
- Follow the Uniformity formula to calculate average values.

☼ Uniformity Formula

JBMA Uniformity = Avg. (P1, P3, P7, P9)/ P5X100%



Full white pattern

Criteria
• 70%

4-12 Network Function Test

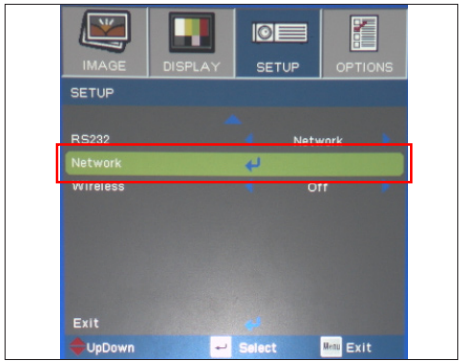
For EX615/EW615i/EX615i

1. Write Down Projector IP

(1) Turn on the Projector, then press "Menu" button to get into OSD Mode.

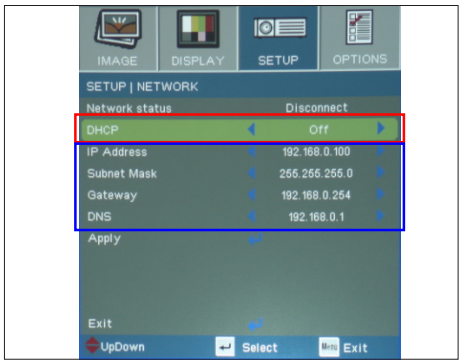
- Use "right" button to select "SETUP".
- Use "down" button to remove the light mark to "RS232", then press "Enter" button to select "Network", press "Enter" button.

(2) Select "Network", press "Enter" button.



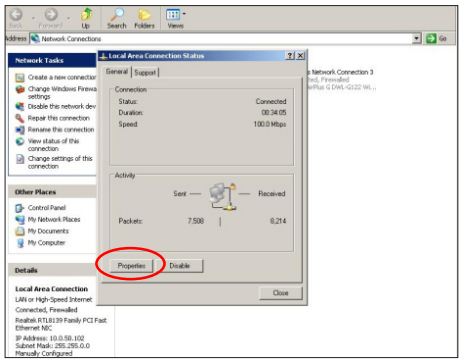
(3) Remove the light mark to "DHCP", then press "Enter" button to select "Off", press "Enter" button.

- The IP address will be shown on screen.
- Write down the IP address: 192.168.0.100.
- Ensure the IP address, Subnet Mask, Gateway and DNS are right as the the picture shown.

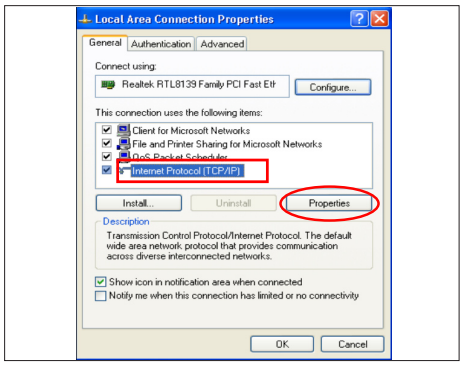


2. Network Setting

(1) Open the "Local area connection", choose "properties".

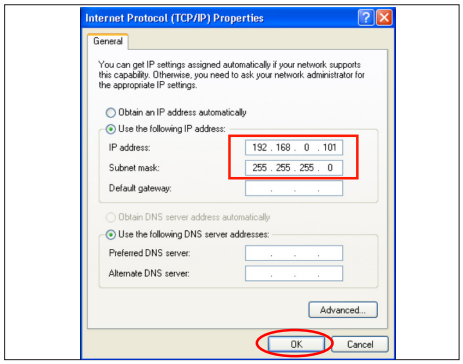


(2) Select "Internet protocol (TCP/IP)", then click "Properties".



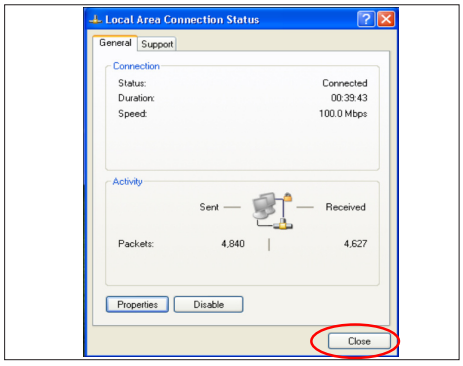
(3) Modify the IP address to 192.168.0.101, and modify Subnet mask to 255.255.255.0.

Note: - The HOST ID (192.168.0.XXX) of PC IP address must be different from the projector IP address written down in step 1 of 4-10.



(4) Click "OK".

(5) Click "Close" to quit the setting screen.



3. Read Projector Information

(1) Connect the PC and the Projector with LAN Cable.

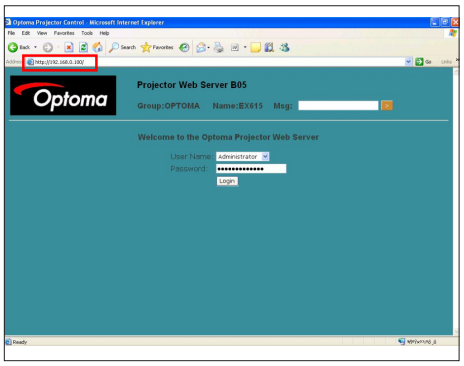
(2) Execute "Internet Explorer".

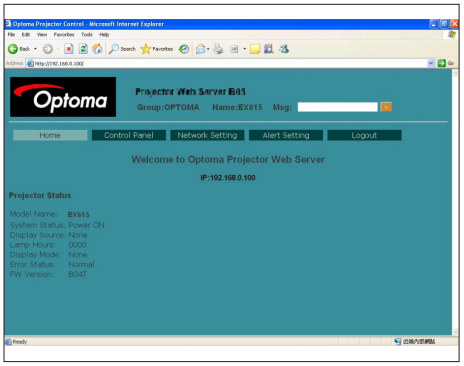
(3) Visit the IP address: "http://192.168.0.100/".

- Key in "User Name: Administrator" and "Password: administrator", click "Login" to get into Projector Web Server.

(4) Projector information will be shown on the screen.

- Please check whether each item's function is OK.





4-12 Others

1. Function Inspection

Keypad button	- All keypad buttons must operate smoothly.
General	- All OSD functions must be checked for functionality. When OSD menu is displayed, there shall be no visible peaking, ringing, streaking, or smearing artifacts on the screen.
Factory Default	- The factory settings (with appropriate centering, size, geometry distortion, etc.) shall be displayed upon “Recall” is selected from OSD.
Display Size	- All preset modes shall expand to full screen size using OSD Horizontal and Vertical Size controls.
Display Data Channel (DDC)	- The purpose of the DDC test is to verify the DDC1/DDC2B operation of the projector and to verify Plug & Play function.
Acoustic	- High pitch sound from cooling fan and color wheel is unacceptable.

2. Check points for exterior and print pattern

Check item	Check point
Text & Pattern	Missing letters & pattern or blurry prints are unacceptable.
Exterior	Dirt, scrape, water ripples and uneven color are unacceptable.
Focus Ring&Zoom Ring	Focus ring&Zoom ring is functioning smoothly.
Logo	Missing logo, missing prints and blurry prints are unacceptable
Screw	All screws sure be fixed and in right type.
Pedestal	Well-functioned
Lamp Cover	It should be locked in the correct place.
Plastic Parts	All plastic parts can not be broken and damaged.
Safety or warning label	All safety and warning labels should be visible, including all contents.
Connector	All interface connectors should be complete and workable.

Chapter 5

Firmware Upgrade

Section 1: System Firmware Upgrade

5-1-1 Equipment Needed

Software: (DDP 2430-USB);

- DLP Composer Lite 9.2
- Firmware (*.img)
- Library file (Library 9.2)

Hardware:

- Projector
- Power Cord: 42.50115G001
- Mini USB Cable: 42.00286G101
- PC or Laptop

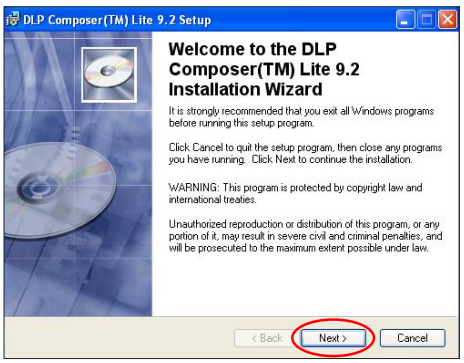
Note: The FW upgrade procedure for EX612/EX615/EW615i/EX612i/EX615i is the same,we take EX615 as an example here.




5-1-2 DLP Composer Lite Setup Procedure

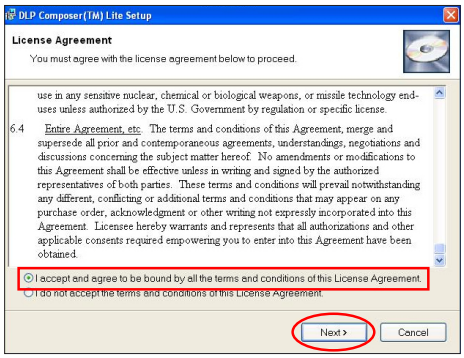
1. Choose "DLP Composer Lite V9.2 Setup" Program.

2. Click "Next".

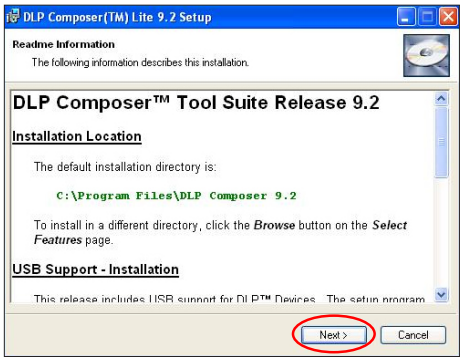


3. Read "License Agreement".

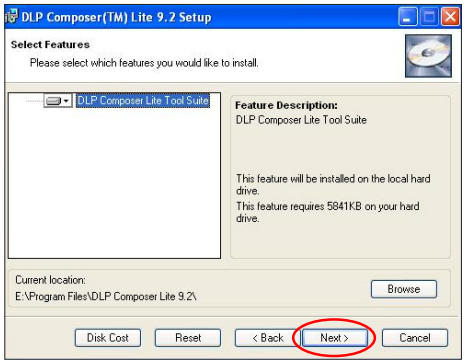
   - Choose "I accept and agree to be bound by all the terms and conditions of this License Agreement".
   - Click "Next".



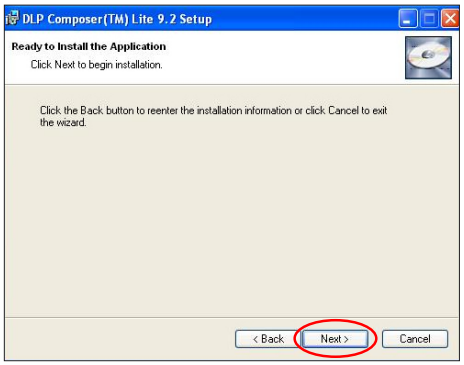
4. Click "Next".



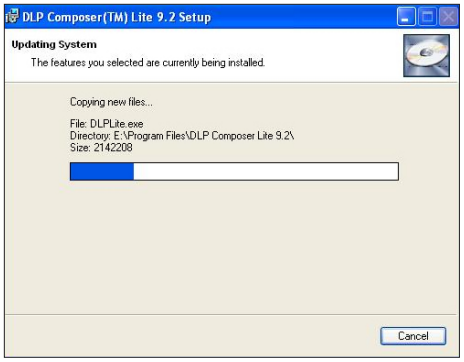
5. Click "Next".



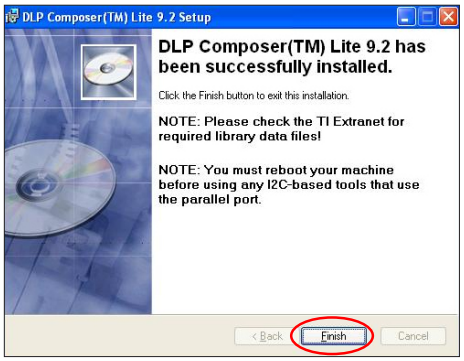
6. Click "Next".



7. The program is executing "installing" status.



8. Click "Finish".



5-1-3 Setup Procedure

1. Set up

   - Hold on "MENU" and "POWER" buttons and plug in the power cord.
   - The ON/STANDBY LED will be flashing green.
   - Release "MENU" and "POWER" buttons.
   - Connect projector with USB cable.

Note: - The system fan and the lamp will not operate.

5-1-4 USB Driver Upgrade Procedure

1. Execute Program

   (1) Connect projector with PC by USB cable.

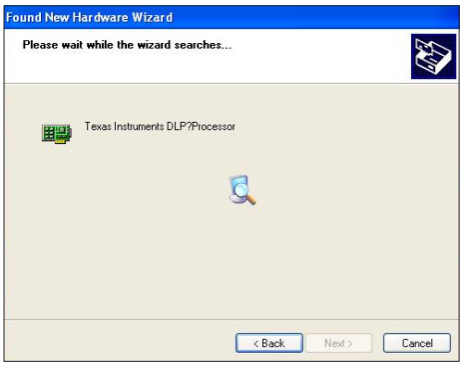
   (2) "Found New Hardware Wiszard" picture will appear on the screen.

   (3) Select "Install the software automatically (Recommended)".

   (4) Click "Next".

   (5) Searching picture, please wait for several seconds.

   (6) Click "Finish", then the USB driver has been installed successfully.

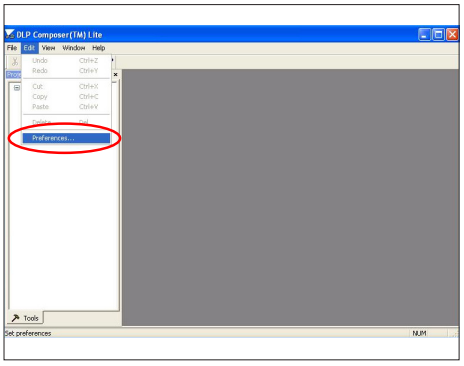


Note: - If you have installed the USB driver, there is no need to perform this action.

5-1-5 Firmware Upgrade Procedure

1. Execute the "DLP Composer™ Lite 9.2" file.

2. Click "Edit" and "Perferences".

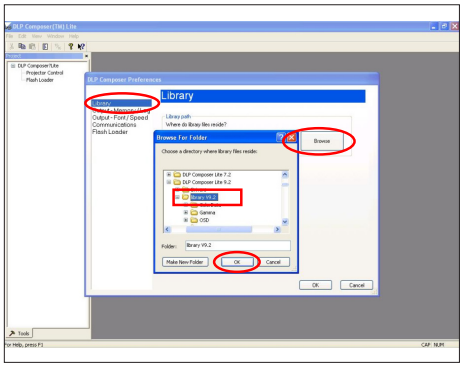


3. Click "Library".

   - Click the "Browse" and navigate to the directory where you put the DLP Composer installation files in.

- Click "Library 9.2" folder.

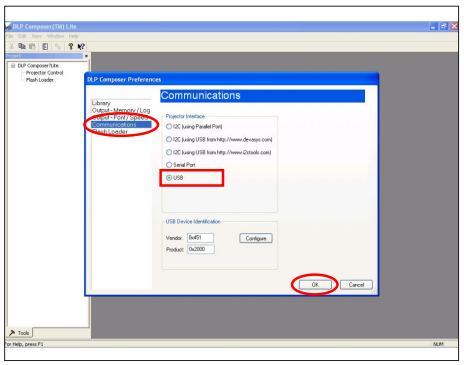
- Click "OK".



4. Click "Communications".

   - Select "USB".

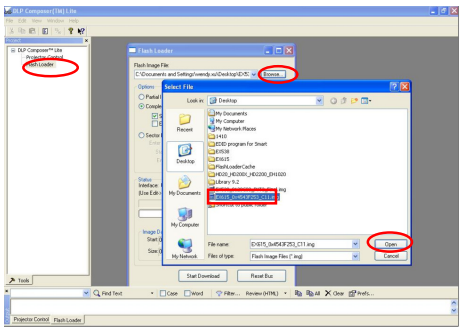
   - Click "OK".



5. Choose "Flash Loader".

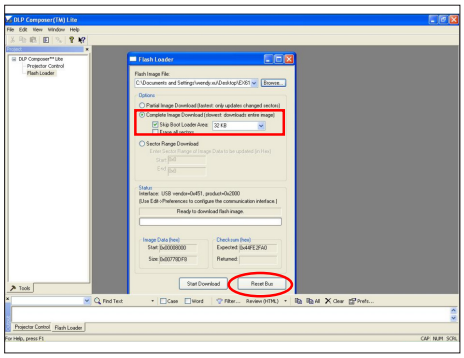
   - Click "Browse" to search the firmware file (*.img).

   - Click "Open".



6. Select "Skip Boot Loader Area". (select "32KB").

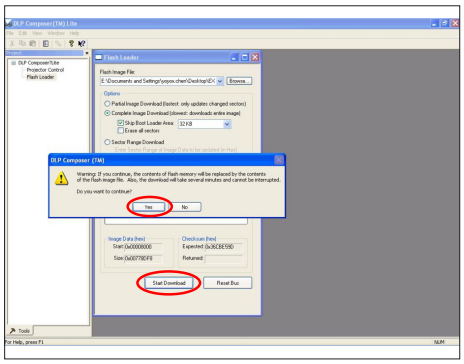
   - Click "Reset Bus" to erase the flash memory.



7. If the FW is ready, click "Start Download" to execute the firmware upgrade.

   - Click "Yes".

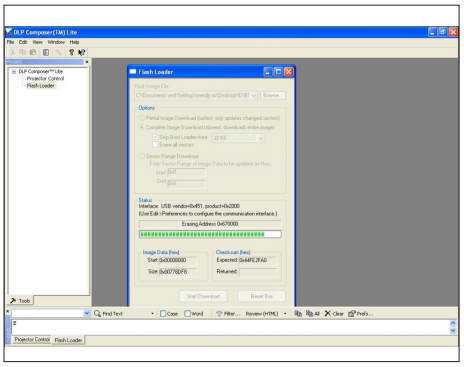
8. Proceeding Picture.



9. It takes about several minutes, the firmware upgrade process is finished, "Download completed" will appear on the screen.

   - The projector will automatically turn on.

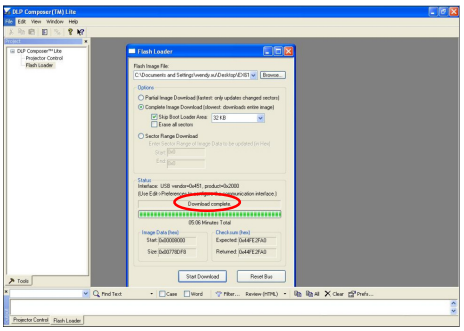
   - Unplug USB cable.

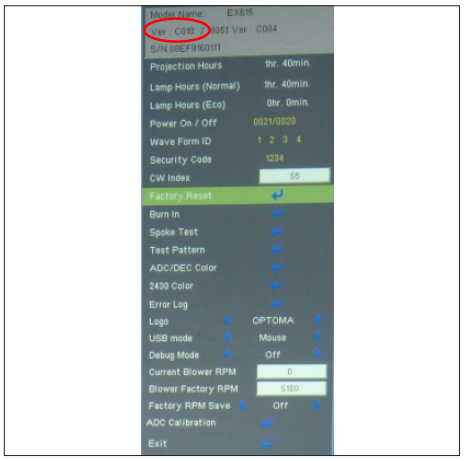


10. Check FW version.

    - Get into the service mode to check the firmware version.

      (To get into service mode, please press "Power", "Left", "Left" and "Menu" buttons sequentially.)





Section 2: 8051 Firmware Upgrade Procedure

5-2-1 Equipment Needed

Software: (DDP 2430-USB/EX612/EX615/EW615i)

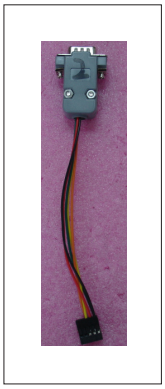
- Setup _NLINK_en
- Manley USB Driver_NLINK
- EX612/EX615/EW615i_8051_xxx.hex

Hardware:

- Projector
- Power Cord: 42.50115G001
- Mini USB Cable
- NLINK Cable 2
- NLINK Fixture
- PC or Laptop

Note: - The 8051 FW upgrade procedure for EX615/EX612/EW615i is the same, we take EX615 as an example here.



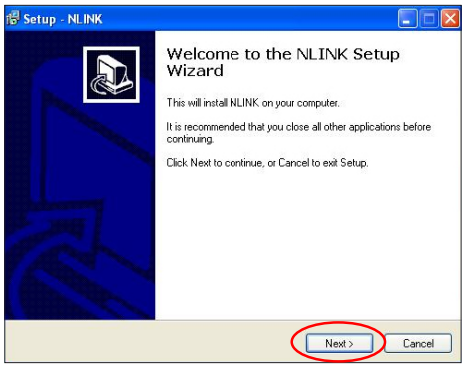




5-2-2 NLINK Setup Procedure

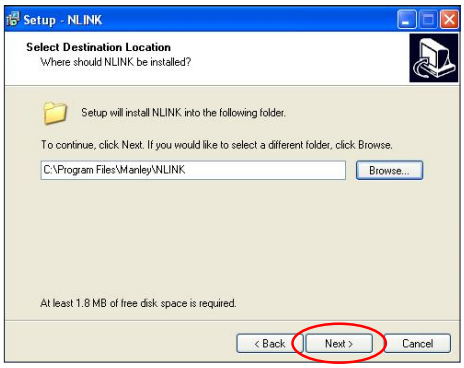
1. Choose "setup_NLINK_en.exe" program.

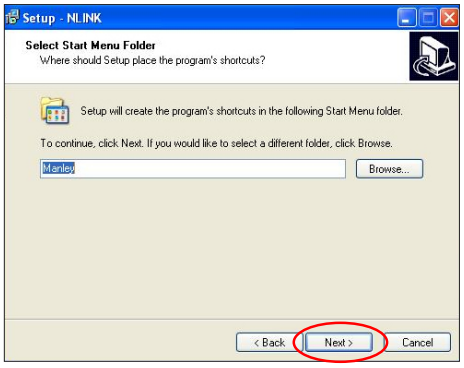
2. Click "Next".

3. Click "Next".



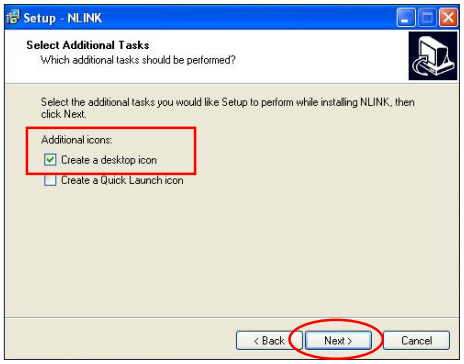
4. Click "Next".



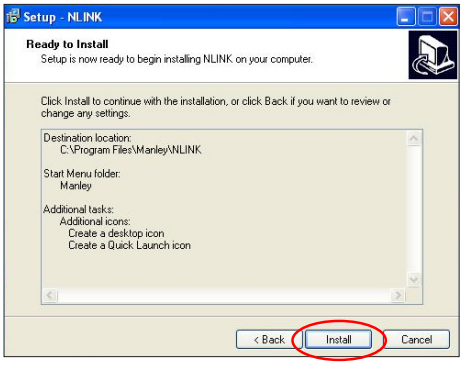


5. Click "Next".

   - Select the additional task that you may create a desktop icon.

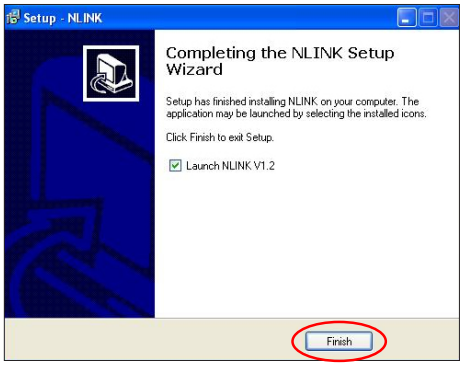


6. Click "Install" to begin installing NLINK Procedure.



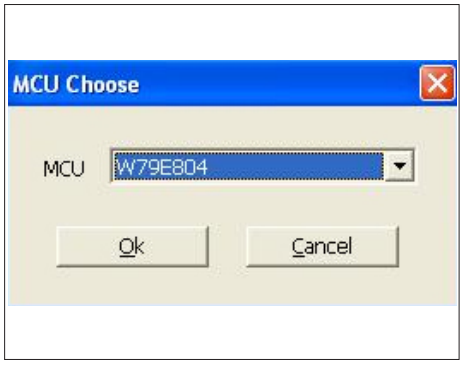
7. Click "Finish".

   - Complete the NLINK setup.



8. "MCU Choose" picture will appear on the screen.

   - Close the picture.



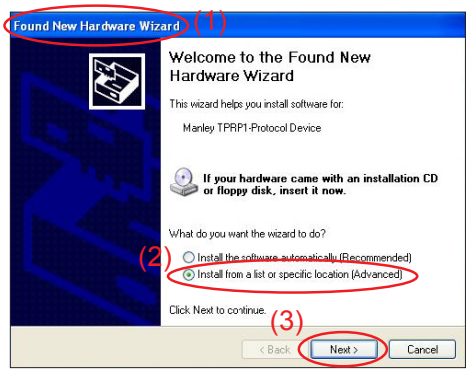
5-2-3 Manley USB Driver Upgrade Procedure

1. Set up

   - Plug in the power cord, the power LED will light on red.
   - Connect VGA-1 Port of projector with NLINK Fixture.
   - Connect NLINK Fixture with PC by USB cable.

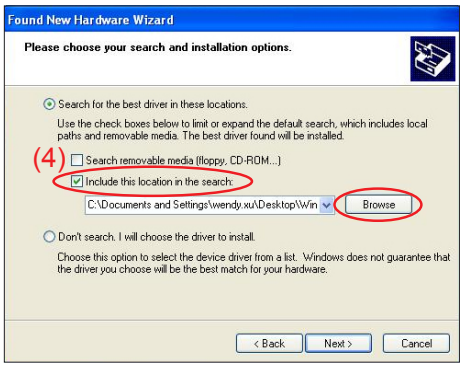
2. Execute Program

   (1) "Found New Hardware Wiszard" picture will appear on the screen.



   (2) Select "Install from a list or specific location (Advanced)".

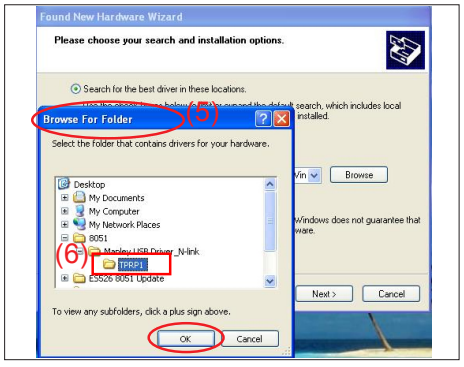
   (3) Click "Next".



   (4) Select "Include this location in the search", then click "Browse".

   (5) "Browse For Folder" picture will appear on the screen.

   (6) Select "TPRP1" folder in the "Manley USB Driver_N-Link" folder, then click "OK".



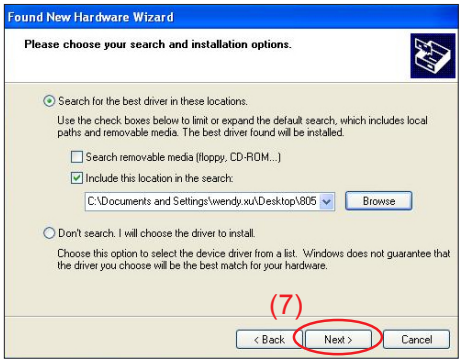
(7) Click "Next".

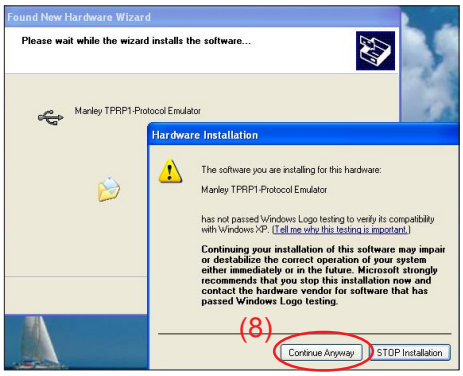
(8) Click "Continue Anyway".

(9) Click "Finish".

- "Manley TPRP1-Protocol Emulator" will appear on the picture.
- Complete the USB Driver Upgrade Procedure.

Note: - If "Found New Hardware Wiszard" picture appear again, repeat step 2 to install USB Drivier.





5-2-4 8051 Firmware Upgrade Procedure

1. Execute 8051 FW Program

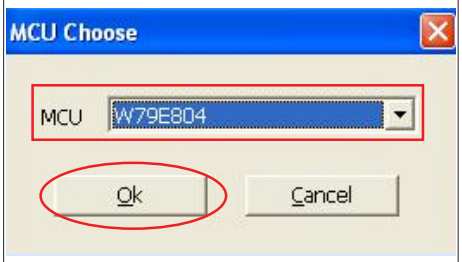
   - Double click "NLINK V1.2" to execute NLINK program.

Note: - When we execute NLINK program, the power LED and Fixture LED flash red.

2. Choose the right type of MCU

   - "MCU Choose" picture will appear on the screen, select "W79E804".

   - Click "OK".



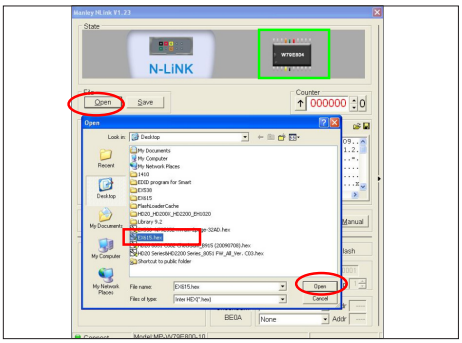
3. Choose 8051 file (*.hex)

   - "Manley Nlink" picture will appear on the screen.

   - Ensure "MCU" is the one you chose in the last step (as green square).

   - Click "Open".

   - Select the 8051 file where you put the file in, then click "Open".

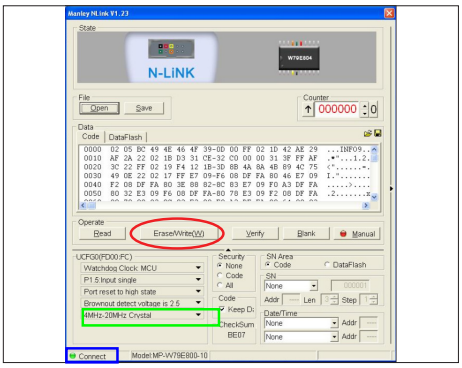


4. Program settings

   - Ensure NLINK Fixture and PC are securely connected: the indicator lights on green, and the state is "Connect" (as blue square).

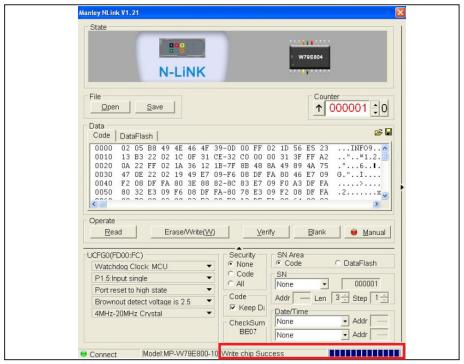
   - Select "4MHz-20MHz Crystal" (as green square).

   - Click "Erase/Write(W)" to execute 8051 FW upgrade.



5. Finish

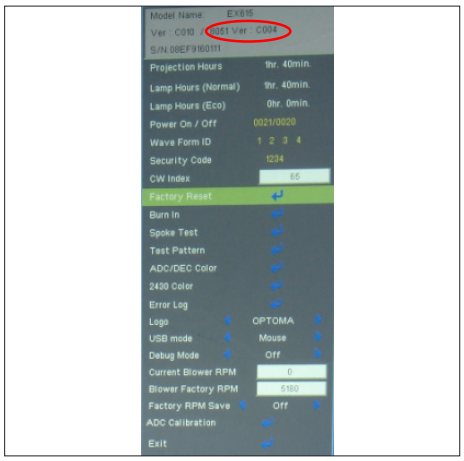
- When 8051 FW upgrade process is finished, "Write Chip success" will be shown.



6. Check 8051 FW version

- Turn on the unit and get into the service mode to check the 8051 FW version.

(To get into service mode, please press "Power", "Left", "Left" and "Menu" buttons sequentially.)



Section 3: Network Firmware Upgrade Procedure (for EX615/EW615i/EX615i)

5-3-1 Equipment Needed

Software:

- EX615/EW615i/EX615i_LAN Module FW_xxx.bin (*.bin)

Hardware:

- Projector
- Power Cord: 42.50115G001
- LAN Cable
- PC

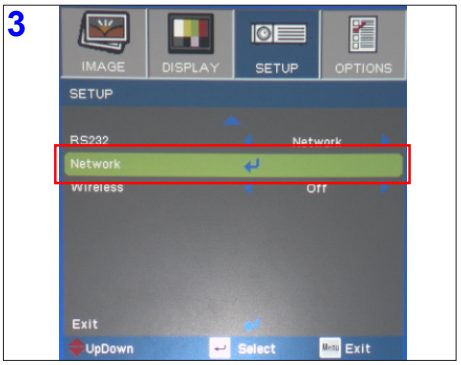



5-3-2 Write Down Projector IP

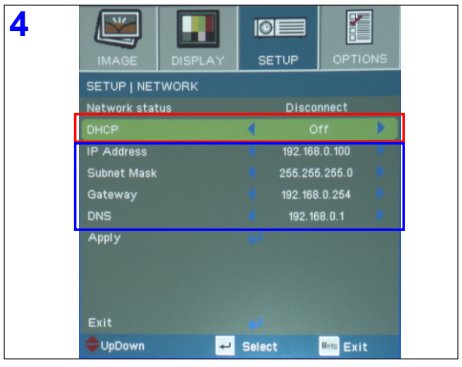
1. Plug in power cord to the projector and plug in LAN cable to the PC.

2. Turn on the projector, then press "Menu" button to get into OSD menu.
   - Use "right" button to select "SETUP".
   - Use "down" button to remove the light mark to "RS232", then press "Enter" button to select "Network", press "Enter" button.

3. Select "Network", press "Enter" button.

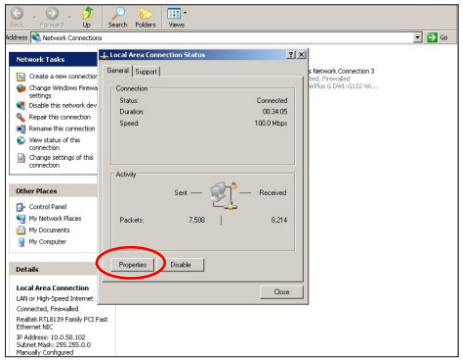


4. Remove the light mark to "DHCP", then press "Enter" button to select "Off", press "Enter" button.
   - The IP address will be shown on screen.
   - Write down the IP address: 192.168.0.100.
   - Ensure the IP address, Subnet Mask, Gateway and DNS are right as the the picture 4 shown.

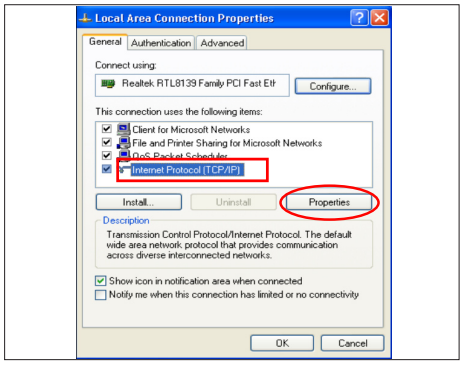


5-3-3 Network Setting

1. Double click the "Local area connection", choose "Properties".

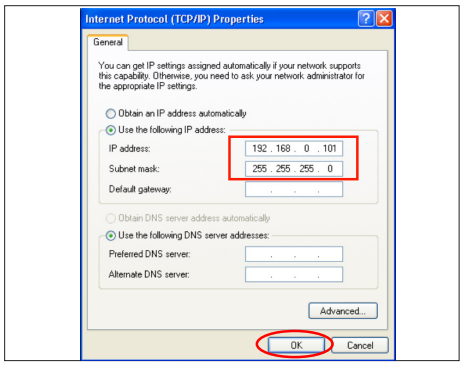


2. Select "Internet protocol (TCP/IP)", then click "Properties".



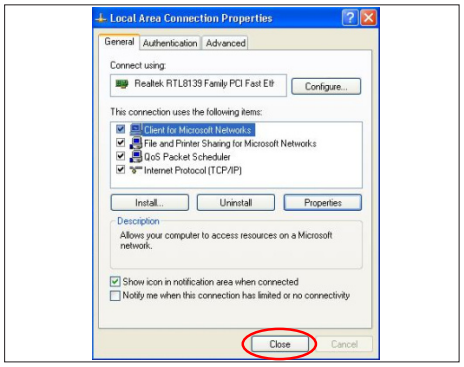
3. Modify the IP address to 192.168.0.101, and modify Subnet mask to 255.255.255.0.

   Note: - The HOST ID (192.168.0.XXX) of PC IP address must be different from the projector IP address written down in step 4 of 5-3-2.



4. Click "OK".

5. Click "Close" to quit the setting screen.



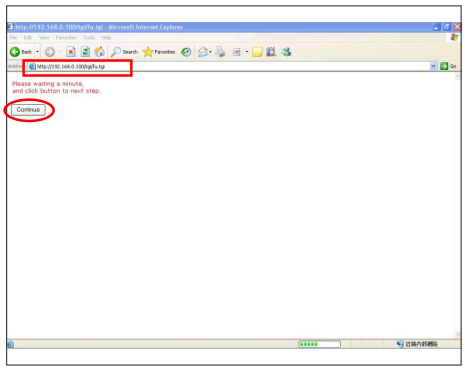
5-3-4 PC Hardware Link

1. Execute "Internet Explorer".

2. Visit "http:// 192.168.0.100/tgi/fu.tgi" to get into Firmware Update screen.

   Note: - The format of address is "IP address/tgi/fu.tgi".

   - Click "Continue".

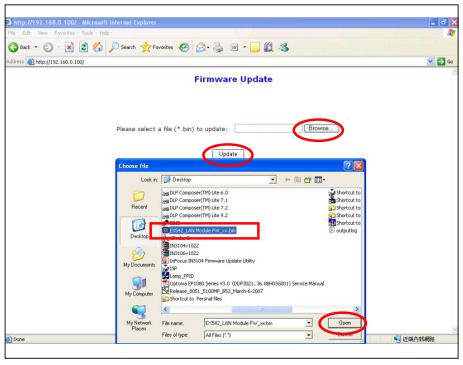


3. "Firmware Update" image will appear on the screen.

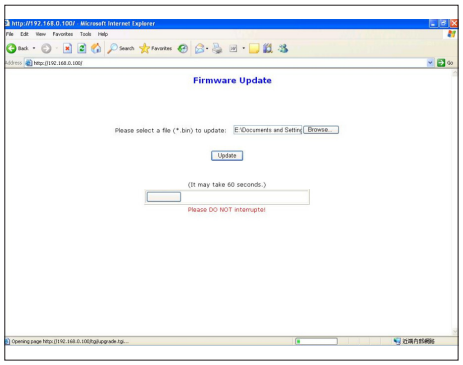
   - Click "Browse" button to select the Network FW file (*.bin) which you saved.

   - Click "Open".

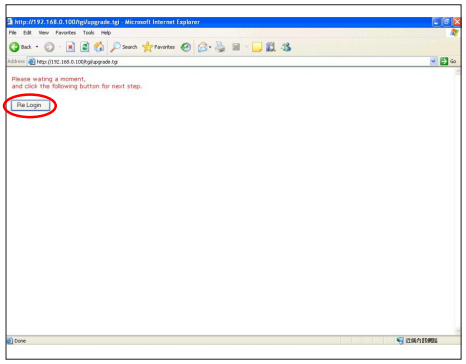
   - Click "Update" to start updating.



4. Firmware Upgrade procedure.

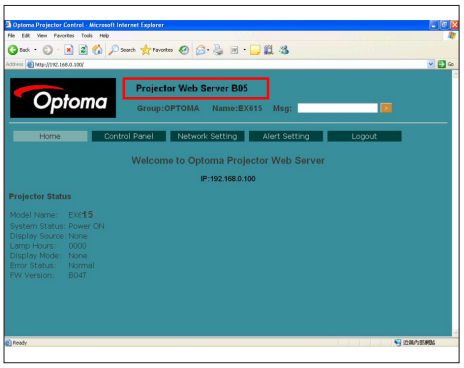


5. Click "Re Login".



6. Firmware upgrade procedure completes.

   - The projector Network FW version will appear.



Chapter 6

EDID Upgrade

6-1 EDID Introduction

Extended Display Identification Data is a VESA standard data format that contains basic information about a display device and its capabilities, including vendor information, maximum image size, color characteristics, factory pre-set timings, frequency range limits, and character strings for the monitor name and serial number.

The information is stored in the display and is used to communicate with the system through a Display Data Channel (DDC), which sites between the display device and the PC graphics adapter. The system uses this information for configuration purposes, so the monitor and system can work together.

Note: - If a display device has digital input ports, like DVI or HDMI, but without EDID in its Main Board, the display device will show no image while the input source is digital signal.

- The EDID Upgrade procedure for EX615/EX612/EW615i/EX612i/EX615i is the same, we take EX615 as an example here.

6-2 Equipment Needed

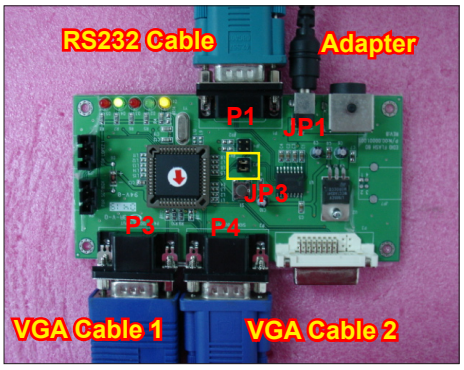
Software

- EDID Program
- EDID File (*.ini)

Hardware

- Projector
- Power Cord for Projector (42.53506G002)
- VGA Cable (42.87305G102)
- HDMI(M) to DVI(F) Adapter (42.82B13G001)
- DVI Cable (42.83N06G001)
- Generic Fixture (80.00001.001) for EDID Key-in (Fixture: JP3 must be closed)
- RS-232 9 Pin Cable (pin to pin, F-M) (42.83C07G001)
- Power Adapter (47.57803G001)
- Monitor
- PC

6-3 Setup Procedure (VGA)



1. Connect all ports
   (1) Connect P1 of fixture with COM Port of PC/Laptop by RS232 Cable.
   (2) Connect P3 of fixture with VGA-1 Port of projector by VGA Cable 1.
   (3) Connect P4 of fixture with VGA-2 Port of projector by VGA Cable 2.
   (4) Plug Power Adapter to JP1 of fixture.
   (5) Power on fixture.
   (6) Plug Power Cord to projector.

Note: -You must confirm that the JP3 is closed in all procedure.

6-4 EDID Key-In Procedure (VGA-1 & VGA-2)

1. Execute EDID Program
   - Double click "EDID" to execute EDID program.

2. Process

(1) Select the COM Port which you are using.

(2) Click "Model".

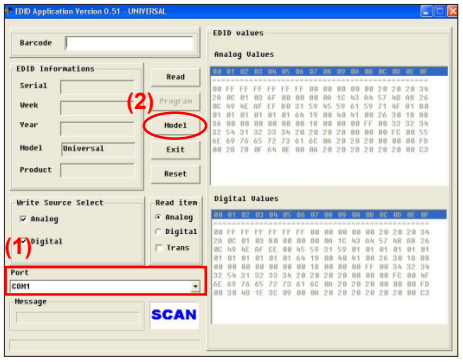
(3) Select the EDID file (*.ini).

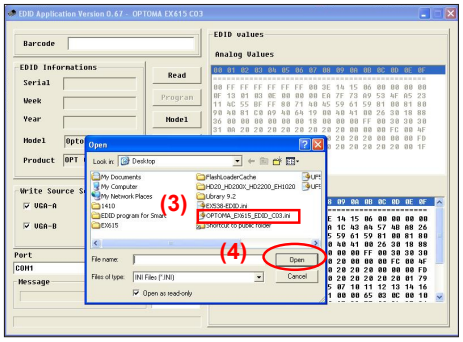
(4) Click "Open".

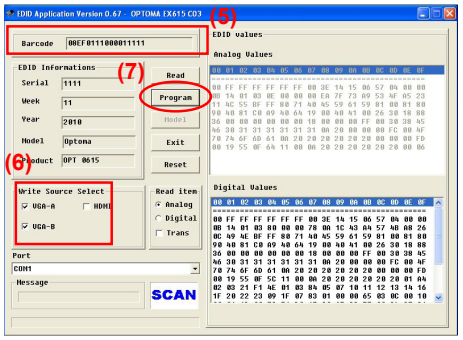
(5) Key in the Serial Number into the Barcode blank space.

(6) In "Write Source Select" item, select "VGA-A" and "VGA-B".

(7) Click "Program".

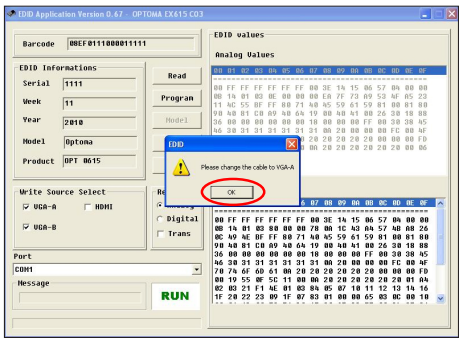






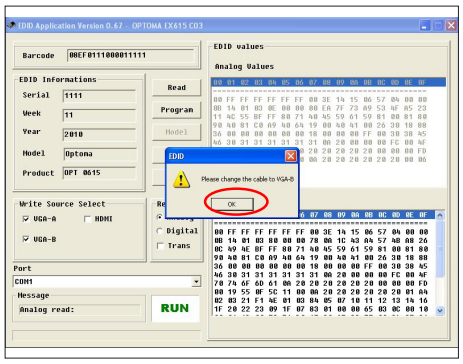
3. Change the cable to VGA-A

- When the message "Please change the cable to VGA-A" appears on the screen, click "OK".

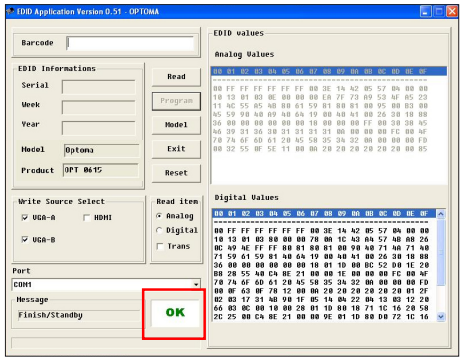


4. Change the cable to VGA-B

   - When the message "Please change the cable to VGA-B" appears on the screen, click "OK".

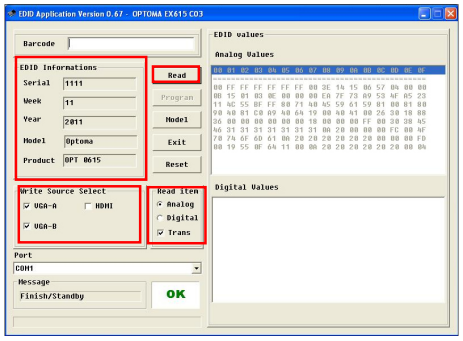


5. When the EDID program is completed, a message "OK" will appear on the screen.



6. Read EDID "VGA-A&VGA-B" information

   - In "Read item", select "Analog" and "Trans", then click the "Read".



7. EDID information will show the result.

6-5 Setup Procedure (HDMI) (for EX615/EW615i)

1. Connect all ports

   (1) Connect P1 of fixture with COM Port of PC/Laptop by RS232 Cable.

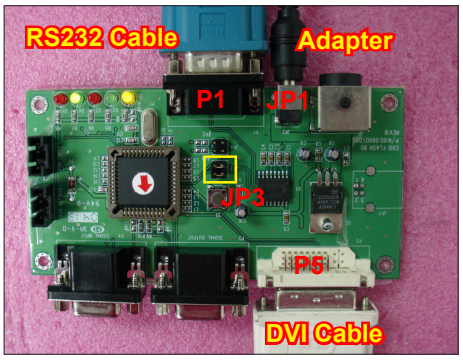
   (2) Connect P5 of fixture with HDMI Port of projector by DVI Cable.

   (3) Plug Power Adapter to JP1 of fixture.

   (4) Power on fixture.

   (5) Plug Power Cord to projector.

   Note: You must confirm that the JP3 is closed in all procedure.



6-6 EDID Key-In Procedure(HDMI) (for EX615/EW615i)

1. Execute EDID Program

   - Double click "EDID" to execute EDID program.

2. Process

(1) Select the COM Port which you are using.

(2) Click "Model".

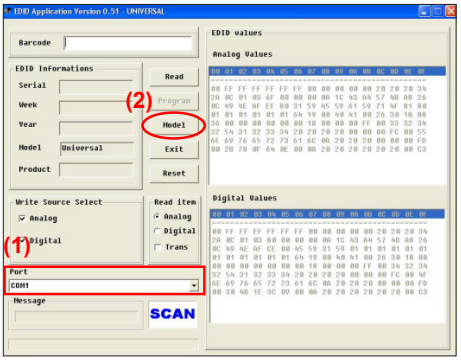
(3) Select the EDID file (*.ini).

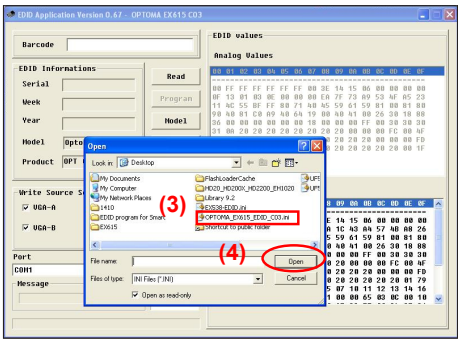
(4) Click "Open".

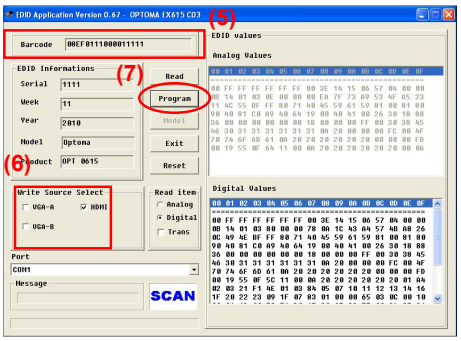
(5) Key in the Serial Number into the Barcode blank space.

(6) In "Write Source Select" item, select "HDMI".

(7) Click "Program".

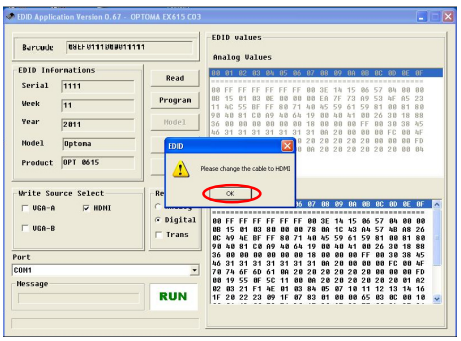




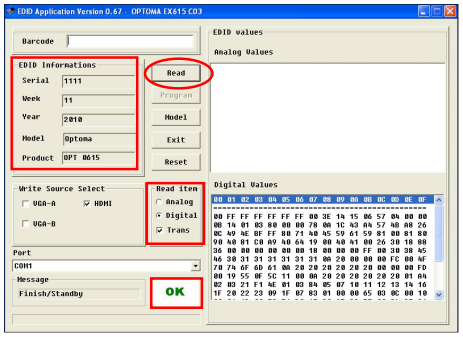


3. Change the cable to HDMI

- When the message "Please change the cable to HDMI" appears on the screen, click "OK".



4. When the EDID program is completed, a message "OK" will appear on the screen.



5. Read EDID "HDMI" information

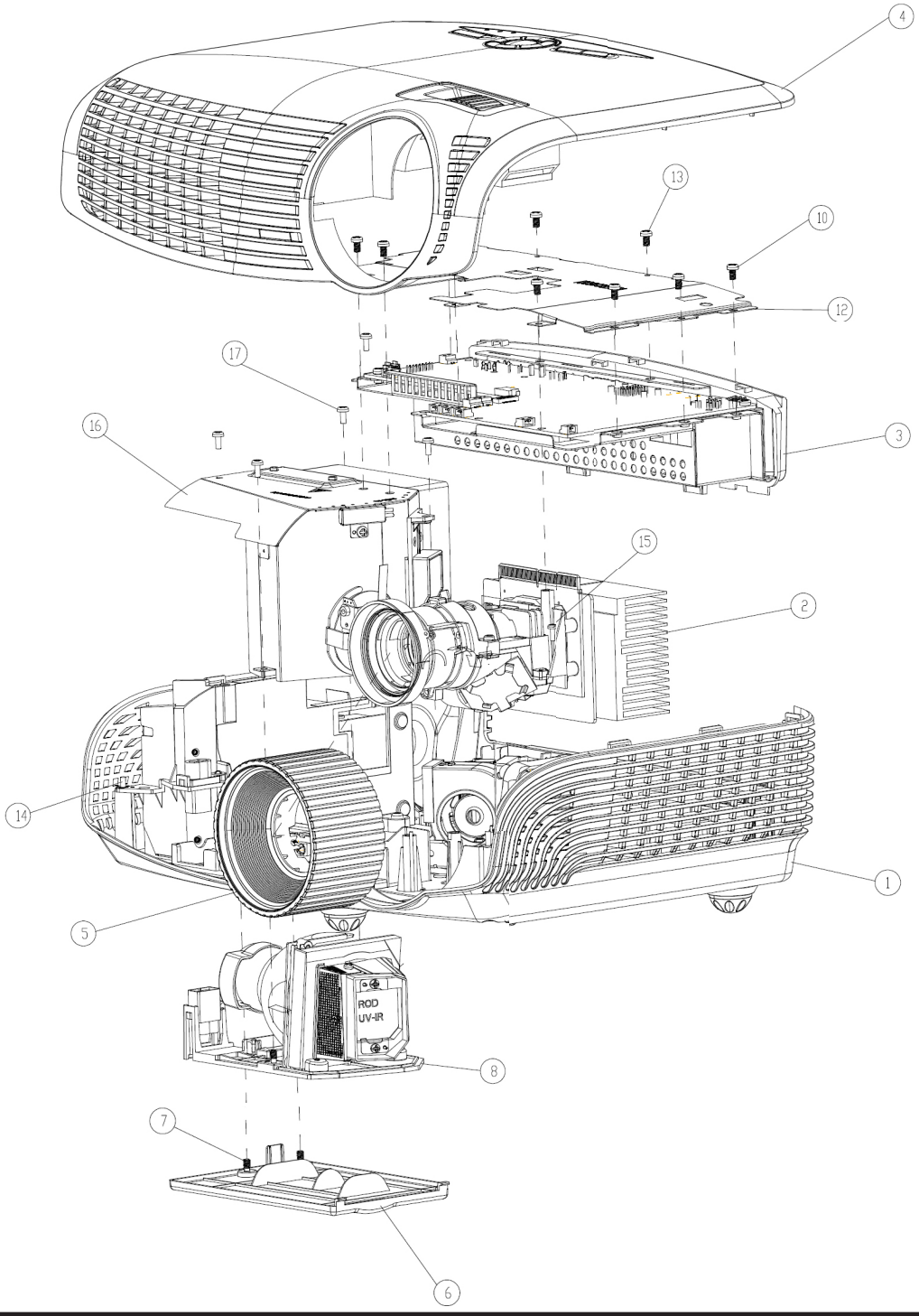
   - In "Read item", select "Digital" and "Trans", then click the "Read".

6. EDID information will show the result.

Appendix A (Exploded Image)

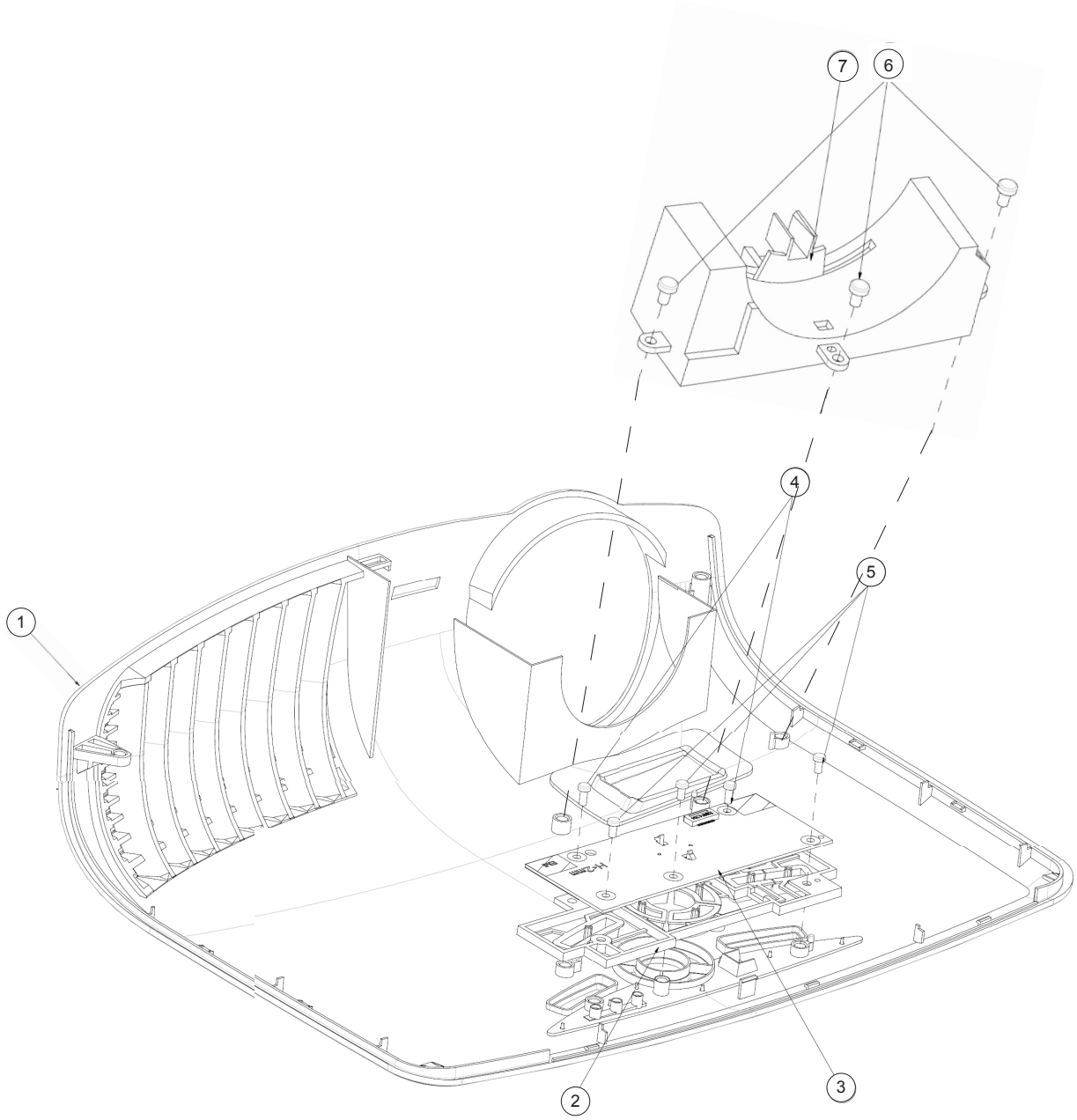
Note: This chapter is only designed to show the exploded image of the projector. For updated part numbers, please refer to RSPL report.

D.C.



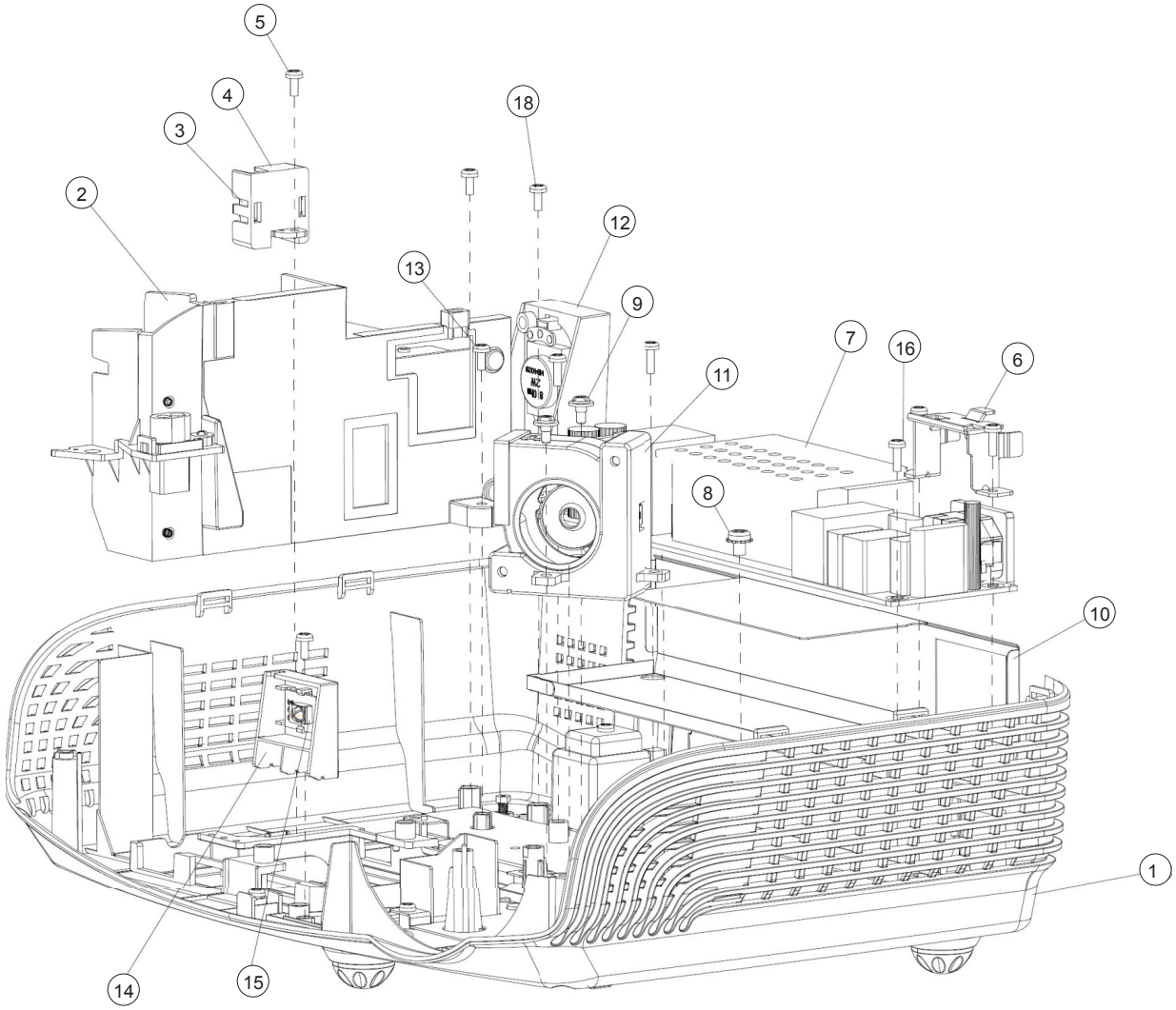
Item	P/N	Description	Parts Supply
1	70.8EF11G001	EX612 ASSY BOTTOM HOUSING MODULE	
2	70.8EF01G001	ASSY OPTICAL ENGINE MODULE EX612	
3	70.8EF08G001	MAIN BOARD ASSEMBLY EX612	
4	70.8EF06G001	TOP COVER AND ZOOM RINGASSYEMBLY EX612	
5	51.8EF02G001	FOCUS RING EX612 (FOR YM09)	
	70.8EF45GR01	ASSY LAMP COVER BLACK EX615 (SERVICE)	V
6	51.8EG03G011	LAMP COVER BLACK EX615	
7	61.00018G002	LOCK SCREW PAN MECH M3*8.5-3.5 BLACK	
8	SP.8EG01GC01	LAMP MODULE FOR PROJECTOR EX615/EX612	V
9	41.83M06G001	EMI TAPE W30*L70mm	
10	85.1A123G050	SCREW PAN MECH M3*5 Ni	
11	85.00823G080	HEX SCREW M3*H8*L5.3,BRASS	
12	61.8EG03G001	TOP SHIELDING HD20	
13	85.0A122G030	SCREW DOUBLE FLAT MECH M2*3Ni	
14	85.1A323G080	SCREW PAN MECH M3*8 BLACK “GREEN”	
15	85.1A526G060	SCREW PAN MECH M2.6*6 Ni NYLOK	
16	70.8EG17G001	ASSY 8525 FAN SHIELDING MODULE HD20	
17	85.1A123G060	SCREW PAN MECH M3*6 NI	

Assy TOP COVER MODULE



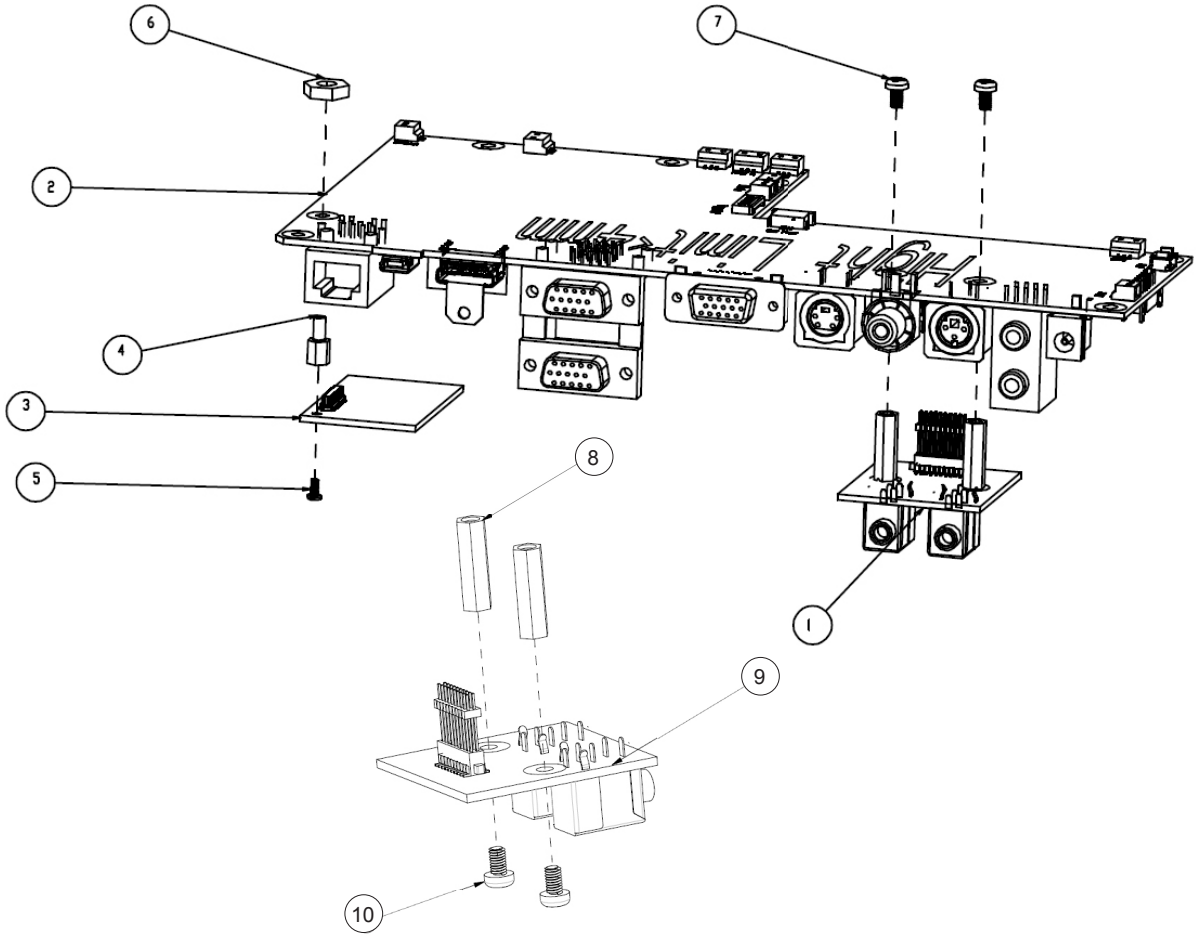
Item	P/N	Description	Parts Supply
1	75.8EF01G002	TOP COVER ASSEMBLY EX615	V
2	51.8EG14G011	KEYPAD PLATE ENTER EX612	
3	80.8EF03G001	PCBA KEY PAD BOARD FOR EX615	V
4	85.1A123G050	SCREW PAN MECH M3*5 Ni	
5	85.1A123G050	SCREW PAN MECH M3*5 Ni	
6	85.41BA6G060	FLAT SCERW M2.6*6 Flat Thickness1.1mm	
7	51.8EG11G001	ZOOM RING DUST COVER HD20	

ASSY BOTTOM COVER MODULE



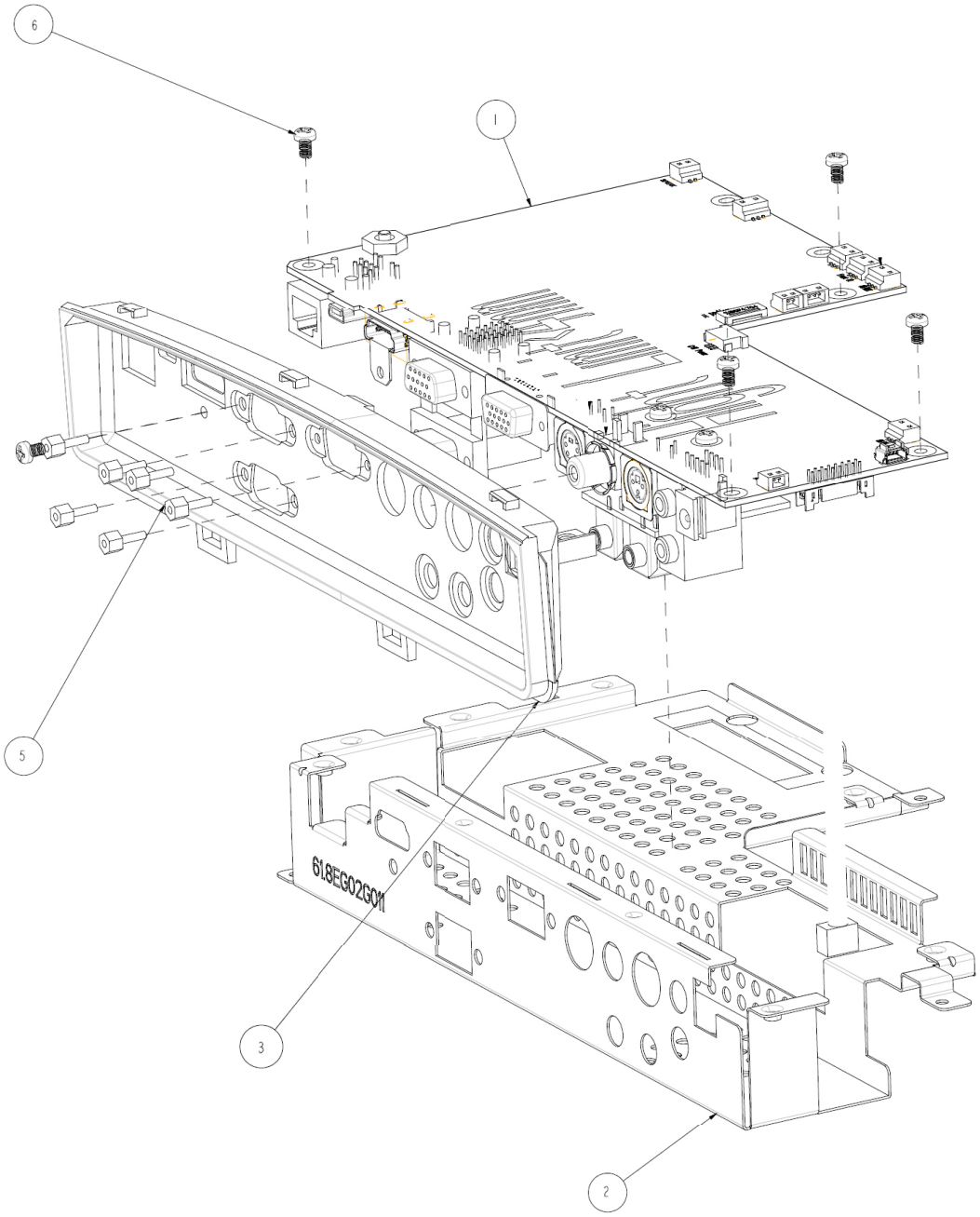
Item	P/N	Description	Parts Supply
	70.8EF37GR01	ASSY BOTTOM COVER MODULE FOR EX615 (SERVICE)	V
1	51.8EG01G011	BOTTOM COVER MN3600H BLACK EX612	
	70.8EF38GR01	ASSY OSRAM LAMP DRIVER 230W FOR EX615 (SERVICE)	V
2	75.8BW01G002	ASSY OSRAM LAMP DRIVER O3 MID 230W (Gen5_Panyu+E20.8)	
3	75.8AA04G001	BUY ASSY INTERLOCK SWITCH 1409X	
4	51.89W18G001	LIMIT SWITCH HOLDER PC MN3600H BLACK TDP-SP1	
5	85.WA126G060	SCREW PAN HEAD TAP M2.6*6	
6	61.88T19G001	AC INLET BRACKET FOR X1160E	
7	75.8CT01G001	ASSY MATRITEK 230W LVPS FOR HORUS	V
8	85.1C224G051	SCREW PAN MECH M4*5 COLOR W/TOOTH WASHER Cr3+	
9	61.87340G001	STAND OFF M3*4L D8.0 2100MP	
10	51.8EG20G001	230W LVPS MYLAR PC T=0.43 HD20	
11	70.8EG14G001	ASSY 4520 BLOWER MODULE HD20	
12	70.8EF10G001	EX612 2W SPEAKER HOLDER ASSY	
13	85.WA123G060	SCREW PAN TAP M3*6 Ni	
14	51.8EG05G001	IR FRONT BOTTOM HOLDER MN3600H BLACK	
15	80.87Z04G001	PCBA IR SENSOR BD HD80	
16	85.1F123G060	SCREW PAN MECH W/SF M3*6 Ni GREEN	
17	42.00451G011	W.A. 16P 90mm LVPS TO MAIN BD UL1007 P1266	
18	85.1F123G060	SCREW PAN MECH W/SF M3*6 Ni GREEN	
19	42.81G01G001	CABLE W.A. 2P #20 160mm LAPS TO BALLAST PD120	
20	51.8EG27G001	REAR SPEAK MYLAR HD20	
21	51.8EF06G001	AIR STOP MYLAR EX615	
22	51.8EG31G001	FRON LEFT LIGHT LEAK MYLAR HD20	

ASSY MAIN BOARD AND IO BOARD MODULE



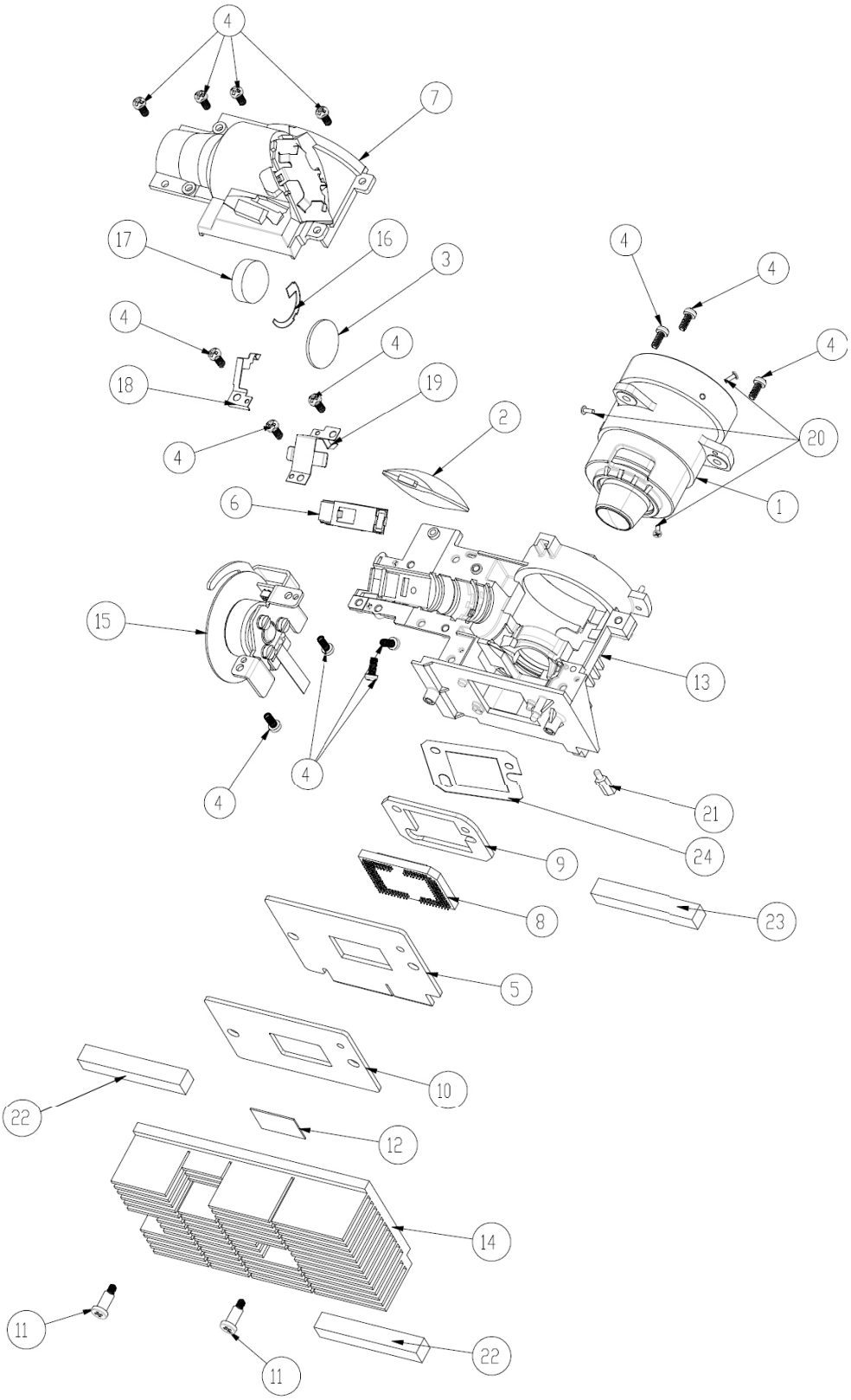
Item	P/N	Description	Parts Supply
1	70.8EF09G001	IO BOARD ASSEMBLE EX612	
	70.8EF43GR01	ASSY PCBA MAIN BOARD FOR EX615 (SERVICE)	V
2	80.8EF01G003	PCBA MAIN BD FOR EX615	V
3	80.8EF07G001	PCBA LAN MODULE BD FOR EX615	V
4	61.00080G001	STAND OFF H=6.0 M2/M3*L6 Sn EP910	
5	85.1A122G040	SCREW PAN MECH M2*4 Ni	
6	86.0A123G024	HEX NUT M3*5.5*0.5P L2.4 Ni	
7	85.1A123G050	SCREW PAN MECH M3*5 Ni	
8	61.83N19G001	HEX SPACER M3 H=17mm L=5mm AL PD726	
9	80.8EF06G002	PCBA DAUGHTER BOARD FOR EX615	V
10	85.1A123G050	SCREW PAN MECH M3*5 Ni	

ASSY MAIN BOARD MODULE



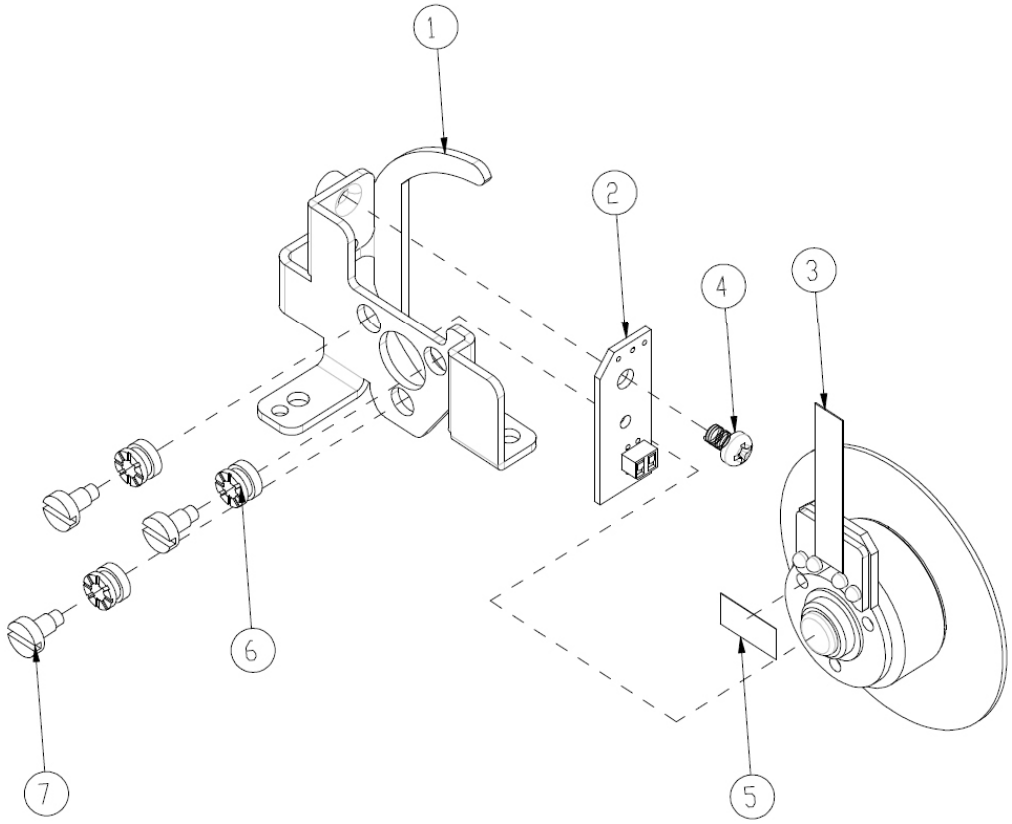
Item	P/N	Description	Parts Supply
1	70.8EF26G001	MAIN BOARD IO BOARD ASSY EX612	
2	61.8EG02G011	MAIN BOARD SHIELDING EX612	
	70.8EF44GR01	ASSY IO COVER MODULE FOR EX615 (SERVICE)	V
3	51.8EG10G011	IO COVER EX612	
4	41.86R01G001	ADUIO I/O PORT EMI GASKET W13*H1*L13mm diameter 6.5mm	
5	85.005AGG408	SCREW HEX I/O #4-40 H4*L8 NI NYLOK	
6	85.1A123G050	SCREW PAN MECH M3*5 Ni	
7	51.8EF04G001	MAIN BOARD MYLAR EX542	
8	52.8EF02G001	MAIN BOARD SPONGE EX615	
9	52.8EF04G001	MAIN BOARD SPONGE 20mm EX615	
10	41.85Y04G002	EMI GASKET (S-VIDEO & S-VIDEO) W18*H0.35*L17 mm	

ASSY OPTICAL ENGINE MODULE



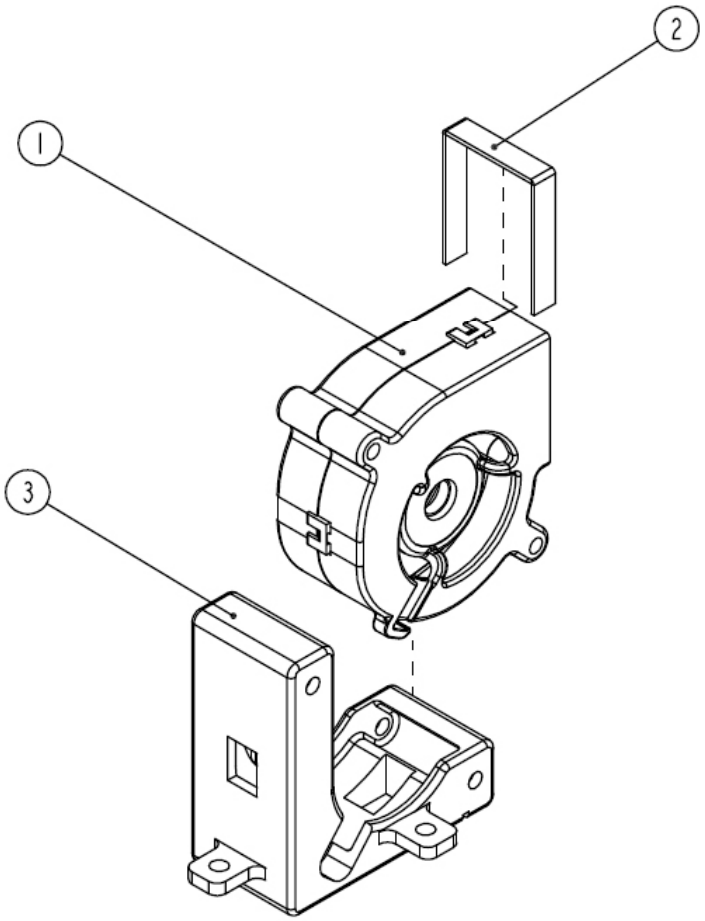
Item	P/N	Description	Parts Supply
1	23.8BA01G001	PROJECTION LENS YM25	
2	70.8EG18G001	ASSY RELAY MODULE HD20	
	70.8EF40GR01	ASSY OPTICAL ENGINE MODULE EX615 (SERVICE)	V
3	23.8AH20G011	YO CONDENSER 1 FOR A15W	
4	85.1A526G060	SCREW PAN MECH M2.6*6 Ni NYLOK	
5	80.8EF02G001	PCBA DMD BD FOR X15-II XGA	V
	70.8EF42GR01	ASSY ROD MODULE EX615 (SERVICE)	V
6	70.8EF36G001	ASSY ROD MODULE EX615	
7	70.8CP10G001	ASSY ENGINE BOTTOM COVER Z15	
8	48.8CQ01G001	0.55” XGA 2xLVDS SERIES 450 DMD -8 TI 1076-603cB	V
9	52.8CP01G011	DMD RUBBER EX615	
10	52.8CP02G001	DMD BOARD RUBBER X1161	
11	85.4A826G118	STEP SCREW FOR TYPEX DMD M2.6*11.8mm, X15	
12	52.8CP04G001	S450 0.55” XGA/SVGA DMD thermal pad, FUJIPO-LY, Sarcon XR-HE, 18.4x12.5x0.5 mm	
13	70.8CP11G001	ASSY ENGINE BASE Z15	
14	61.8EF02G001	DMD HEATSINK AL6063 EX615	
15	70.8EF03G001	ASSY COLOR WHEEL MODULE EX612	
16	61.8EF03G001	CONDENSER LIGHT STOP EX615	
17	23.8AH20G012	YO CONDENSER 2 FOR A15W	
18	61.88N13G002	ROD COVER NEW SUS301 X15	
19	61.88N12G001	ROD SPRING SUS301,X15	
20	85.WA321G040	SCREW PAN TAP M1.7*4 BLACK	
21	85.00823G080	HEX SCREW M3*H8*L5.3,BRASS	
22	41.83C01G001	EMI GASKET W13*H15*L40	
23	41.8BV01G001	EMI GASKET W6*H13*L40	
24	61.8EF01G001	DMD MASK EX615	

ASSY COLOR WHEEL MODULE



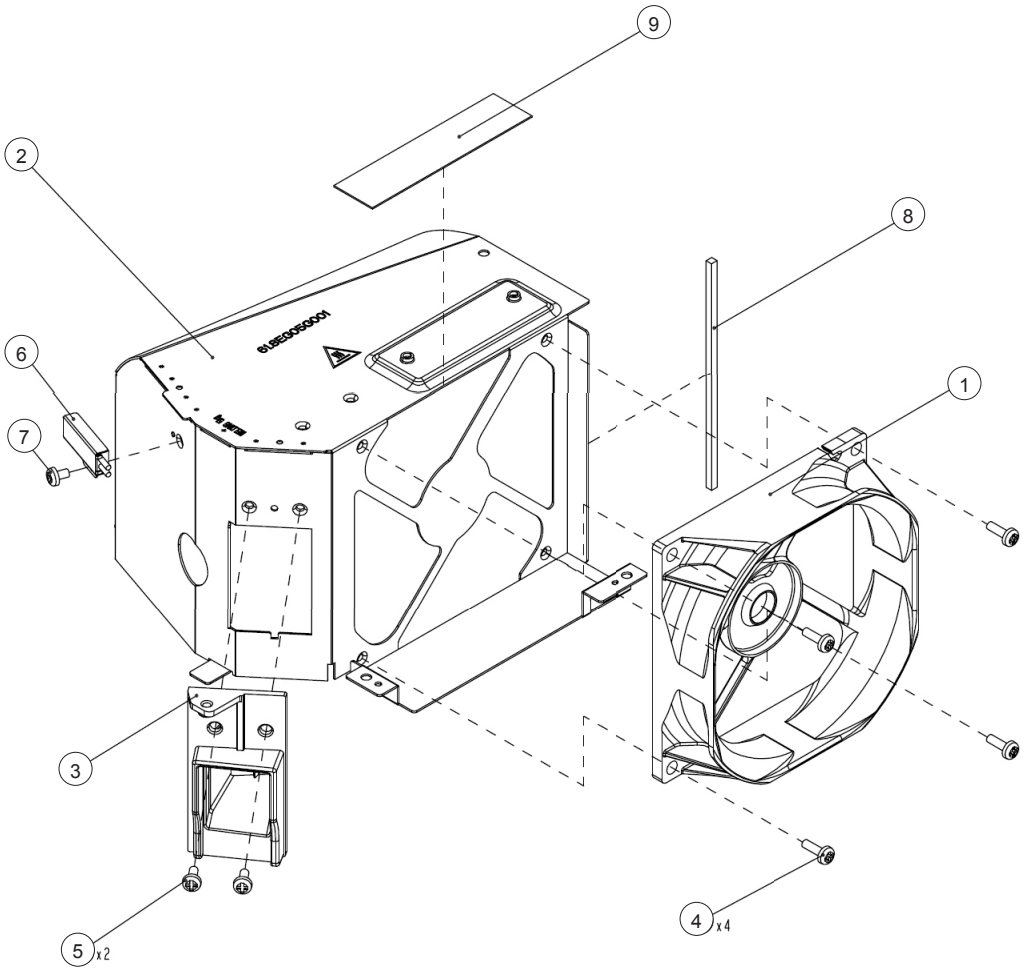
Item	P/N	Description	Parts Supply
	70.8EF41GR01	ASSY COLOR WHEEL MODULE EX615 (SERVICE)	V
1	61.8CP03G001	CW BRACKET SECC X1161	
2	80.8EF04G001	PCBA PHOTO SENSOR BOARD FOR EX615	V
3	23.8EF19G101	YO 5S R76Y32G78W98B76 CW (WITH FTZS MOTOR)	
4	85.1A126G040	SCREW PAN MECH M2.6*4 Ni	
5	51.82Y29G001	TAPE 3M J350 10*5mm FOR COLOR WHEEL DP715	
6	52.83615G001	COLOR WHEEL DISC RUBBER, EzPro755	
7	61.83628G001	COLOR WHEEL SHOULDER SCREW,EzPro755	

ASSY BIOWER MODULE



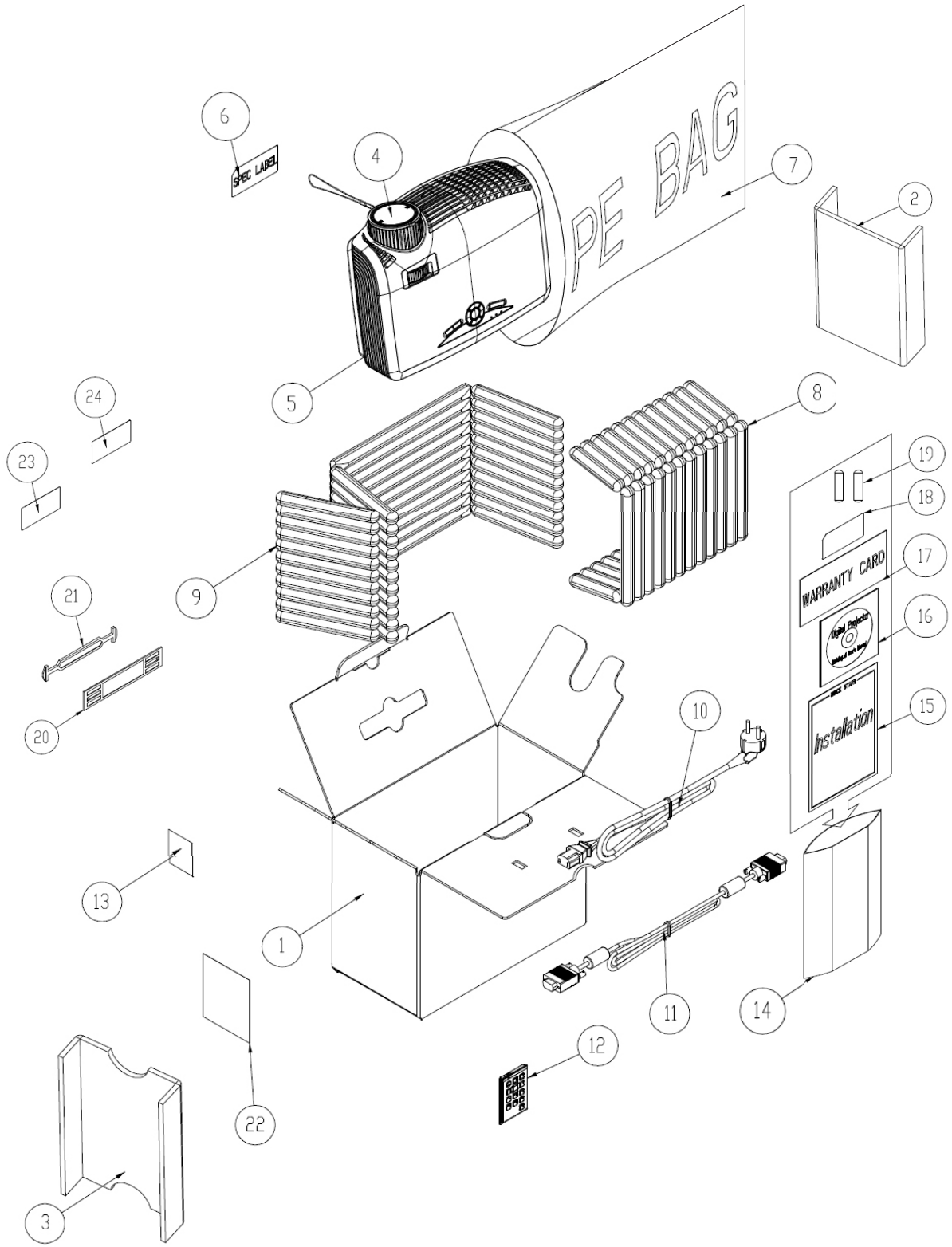
Item	P/N	Description	Parts Supply
1	49.8EF04G001	SUNON 45*20mm GB1245PKVX-8 F-TYPE BLOWER (EX612/EX615)	V
2	52.89T01G001	BLOWER AIR TIGHT F12 H5350	
3	52.82G08G001	BLOWER 4520 RUBBER EP7190	

ASSY FAN SHIELDING MODULE



Item	P/N	Description	Parts Supply
1	49.8EF03G001	SUNON KDE1285PTV1 AXIAL FAN-LOW COST (EX612/EX615)	V
2	61.8EG05G001	8525 FAN SHIELDING HD20	
3	61.8EG11G001	LAMP BLOWER DUCT HD20	
4	85.1A123G080	PAN SCREW M3*8 FOR YM-64 FRONT CELL&SP	
5	85.1A123G060	SCREW PAN MECH M3*6 NI	
6	43.8EG17G001	THERMAL SWITCH WITH BRACKET (KLIXON YS11) HD20 100C EX615	V
7	85.1A123G040	SCREW PAN MECH M3*4 Ni	
8	51.81540G001	TAPE 3M J350 17*60mm	
9	41.8EF01G001	EMI GASKET W5*H4*L80m	

A.K.



Item	P/N	Description	Parts Supply
1	55.8EG01G011	CARTON OUTSIDE BOX AB FLUTE EX615	V
2	55.8EG02G001	PARTITION PAPER RIGHT HD20	
3	55.8EG03G001	PARTITION PAPER LEFT HD20	
4	70.8EG01G001	LENS CAP ASSEMBLY HD20	
5	DC.8EF01G001	D.C. EX615	
6	35.86301G001	SPEC LABEL BLANK PD120	
7	51.00093G002	PE BAG 400*520*0.07mm FOR OPTOMA	
8	56.8EG01G001	AIR BAG BOTTOM HD20	
9	56.8EG02G001	AIR BAG TOP HD20	
10	42.50112G001	CABLE POWER CORD 1830mm SP-023+IS14 EUR. GREEN	
11	42.00200G005	CABLE VGA 15P 1.8M BLK EP739	
12	45.8EF01G001	REMOTE CONTROL OF Z15II WITH LASER	V
13	57.00001G001	PACK SIO2 DRIER 20g	
14	51.00027G003	PE BAG ZIPPER 33cm*25cm SIZE GREEN FOR OPTOMA	
15	36.8EF02G001	QUICK START CARD MULTILINGUAL OPTOMA EX615	
16	36.8EF01G001	USER'S GUIDE MULTILINGUAL (CD) OPTOMAEX615	V
17	36.00012G002	WARRANTY CARD 3 YEARS, USA FOR OPTOMA LPP SERIES	
18	36.00018G001	EXTENDED WARRANTY ; REGISTRATION FORM,USA FOR LPP SERIES	
19	46.80S01G101	BATTERY #7 1.5V NOVACELL	
20	51.00200G001	HANDLE BAR 2. PE HD70	
21	51.00201G001	HANDLE BAR 1.PE HD70	
22	35.82001G111	AK LABEL 3"*3" BLANK	
23	35.00040G001	LABEL 30mm,GREEN	
24	35.52302G091	LABEL CARTON 108*92 BLANK	

Appendix B

I. Serial Number System Definition

Serial Number Format for Projector (take EX615 as example)

Q 8EF 9 15 AAAAA C 0001

(1) (2) (3) (4) (5) (6) (7)

(1) : Q = Optoma

(2) : 8EF = Project Code

(3) : 9 = Last number of the manufacture year (ex: 2009 = 9)

(4) : 15 = week of the manufacture year (ex: the fifteenth week of the year = 15)

(5) : AAAAA = not-defined

(6) : C = Manufacture factory (CPC)

(7) : 0001 = Serial Code

EX: Q8EF915AAAAAC0001

This label "Q8EF915AAAAAC0001" represents the serial number for EX615. It is produced at CPC on fifteenth of 2009. Its serial code is 0001.

II. PCBA Code Definition

PCBA Code for Projector

A	B	XXXXXXXXXX	C	XXX	EEEE
1	2	3	4	5	6

1 : ID

2 : Vendor Code

3 : P/N

4 : Revision

5 : Date Code

6 : S/N