SERVICE MANUAL



EX542/EX612/EX615/EX540/EX762/EX540I/EX542I/ ES523ST/EW533ST

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
2010.02.07	V4.0	Add ES523ST/EW533ST; Modify "Defect specification table" in Chapter 4;

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Check: Mik Approved: Mik

Preface

This manual is applied to EX542/EX612/EX615/EX540/EX762/EX540I/EX542I/ES523ST/ EW533ST 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.

EX542/EX612/EX615/EX540/EX762/EX540I/EX542I/ES523ST/EW533ST Service Manual Copyright Feb. 2010 All Rights Reserved Manual Version 4.0

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EX542/EX612/EX615/EX540/EX762/EX540I/EX542I/ES523ST/ EW533ST Comparison List

Parts	EX540	EX542	EX540I	EX542I	EW533ST	ES523ST	EX615	EX612	EX762
USER'S GUIDE	36.8FB01G001	36.8EF	01G001	36.8FR01G001	36.8HA	01G001	36.8EF01G001	36.8FK01G001	36.8FB01G001
LAMP DRIVER MODULE	70.8FJ05GR01						70.8EF3	38GR01	70.8FB21GR01
LVPS			75.8CT	02G001			75.8CT	01G001	75.8FB01GP01
BLOWER			49.8CS	01G002			49.8EF	04G001	49.8FB01G001
OPTICAL ENGINE MODULE	70.8FJ06GR01		70.8FJ	30GR01	70.8HA18GR01	70.8GZ16GR01	70.8EF40GR01	70.8FK03GR01	70.8FB22GR01
MAIN BOARD MODULE	70.8FR05GR01	70.8FJ03GR01	70.8FR24GR01	70.8FJ27GR01	80.8HA01G001	80.8GZ01G001	70.8EF43GR01	80.8FK01G001	70.8FB24GR01
DMD CHIP	48.8EZ01G001	48.8CQ01G001	48.8EZ01G001	48.8CQ01G003	48.8EJ01G001	48.8EH01G001	48.8CQ	01G001	48.8CQ01G003
FAN	49.88T01G001			01G001				49.8EF03G001	
THERMAL SWITH	43.8EF17G001			17G001			43.8EG	17G001	43.8FB17G001
IO COVER MODULE	70.8FJ04GR01 70.8FJ		28GR01	70.8HA20GR01	70.8GZ17GR01	70.8EF44GR01	70.8FK02GR01	70.8EF44GR01	
SPEAKER		49.8EF0	01G001		49.8GZ	01G001	49.87K	01G201	49.8EM01G011
DAUGHTER BOARD	80.8EF06G002			80.8GZ	06G001	80.8EF	06G003	80.8EF06G002	
LAN MODULE BOARD	80.8EF07G001				N	A		80.8EF07G001	
REMOTE CONTROL	45.8EF01G001				45.8GZ01G001	45.8EF	02G001	45.8EF01G001	
COLOR WHEEL MODULE	70.8EF41GR01 70.8FJ29GR01		29GR01	70.8FB	23GR01	70.8EF4	41GR01	70.8FB23GR01	

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PCBA Code Definition

EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST	Confidential	VI
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Introduction

1-1 Highlight

No	Item	Description
1	Technology	 0.55" XGA 2xLVDS SERIES 450 DMD DC3 (for EX542/EX612/EX615/EX762/EX542I/EX540/EX540I) 0.55" SVGA, S450, Dark Chip 3 (for ES523ST) 0.65" WXGA, S450, Dark Chip 3 (for EW533ST)
2	Dimension (W x D x H)	• 324 x 234 x 97 mm
3	Weight	 6.3-6.4 lbs (for EX542/EX612/EX615/EX540/EX540I/EX542I) <6.7 lbs (for EX762) 6.5 lbs (for ES523ST/EW533ST)
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 EX542/EX612/EX615/EX762/EX542I/ EX540/EX540I) Native Resolution: 800x600 (for ES523ST) Native Resolution: 1280x800 (for EW533ST)
7	Power consumption	 Full Mode:(Typ)338W,(Max)372W @ac 110V ECO mode:(Typ)285W,(Max)314W @ac 110V (for EX762) Full Mode:(Typ)231W,(Max)255W @ac 110V ECO Mode:(Typ)212W,(Max)233W @ac 110V (for EX540/EX542) Full Mode:(Typ)298W,(Max)328W @ac 110V ECO Mode:(Typ)247W,(Max)272W @ac 110V (for EX615/EX612) Full Mode:(Typ)233W,(Max)255W @ac 110V ECO Mode:(Typ)207W,(Max)230W @ac 110V ECO Mode:(Typ)207W,(Max)230W @ac 110V (for EX540I/EX542I) Full Mode: (Typ) 230W, (Max) 255W @ 110VAC ECO Mode:(Typ) 212W, (Max) 233W @ 110VAC (for ES523ST/EW533ST)

8 Throw ratio 1.95~2.15 @60*(Distance/Width) (for EX612/EX615) 1.6~1.92 @60*(Distance/Width) (for EX640/EX542/EX540/EX5421) 0.72 (Distance/Width) (for EW533ST) 0.9 (Distance/Width) (for EW533ST) 0.9 (Distance/Width) (for ES523ST) 0.9 (Distance/Width) (for ES52450/EX540/EX542) 9.70jection lens • YM25, F# 2.4 ~ 2.66, f= 18.2~21.8 mm @60* (for EX542/EX540/EX540/EX540/EX540/EX542) • YM09X/FPL30, F# 2.41~2.55 @60*, f= 21.8 ~ 24 mm @60* (for EX542/EX762/EX540/EX540/EX540/EX542) • YM09X/FPL30, F# 2.41~2.55 @60*, f= 21.8 ~ 24 mm @60* (for EX540/EX542/EX540/EX540/EX542) • YM09X/FPL30, F# 2.41~2.55 @60*, f= 21.8 ~ 24 mm @60* (for EX540/EX542/EX540/EX540/EX542) • YM09X/FPL30, F# 2.41~2.55 @60*, f= 21.8 ~ 24 mm @60* (for EX540/EX542/EX540/EX540/EX542) • YM09X/FPL30, F# 2.41~2.55 @60*, f= 21.8 ~ 24 mm @60* (for EX540/EX542/EX540/EX540/EX542) • YM09X/FPL30, F# 2.41~2.55 @60*, f= 21.8 ~ 24 mm @60* (for EX540/EX542/EX612/EX540/EX542) • YM09X/FPL30, F# 2.41~2.55 @305T) • 2000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX612/EX533ST) • 4000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX615/EX762/EX540/EX542) • 4000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX612/EX615/EX762/EX540/EX542) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540/EX542) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540/EX542) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540/EX542) • A12. PAL B/D/G/H/I/MN, 4.43 MHz • PAL: PAL B/D/G/H/I/MN, 4.43 MHz • PAL: PAL B/D/G/H/I/MN, 4.43 MHz • PAL: PAL B/D/	No	Item	Description
8 Throw ratio (for EX540/EX542/EX762/EX540//EX542/) 9 Projection lens • 0.72 (Distance/Width) (for EW533ST) 9 Projection lens • YM055, F# 2.4 + 2.66, f= 18.2 - 21.8 mm @60" (for EX542/EX762/EX540/EX540//EX542/L) 9 Projection lens • YM09X/FPL30, F# 2.41 - 2.55 @60", f= 21.8 ~ 24 mm @60" (for EX612/EX615) 9 Projection lens • YM09X/FPL30, F# 2.41 ~ 2.55 @60", f= 21.8 ~ 24 mm @60" (for EX612/EX615) 10 Lamp life • 2000 Hours, 50% Survival Rate (Standard-Mode) (for EX612/EX612) 10 Lamp life • 2000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX5612) 10 Lamp life • 6400 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX5612) 11 Offset • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540//EX542) 11 Offset • 115% ± 5% (for EX540/EX542/EX512/EX615/EX762/EX540//EX542) 12 Video compatibility • NTSC: N 3.58 MHz, 4.43 MHz 12 Video compatibility • NTSC: N 3.58 MHz, 4.43 MHz 13 Aspect ratio • A:3, 16:9, 16:10, Native, AUTO (for EX540/EX542/EX612/EX615/EX762/EX540//EX542)) 13 Aspect ratio • 4:3, 16:9, 16:10, Native, Auto (for ES523ST/EW533ST)			• 1.95~ 2.15 @60"(Distance/Width) (for EX612/EX615)
0.72 (Distance/Width) (for EW533ST) 9 Projection lens 9 Projection lens 9 Projection lens 10 VM25, F# 2.4 - 2.66, F 18.2 - 21.8 mm @60" (for EX542/EX762/EX540/EX542/EX50/EX540/EX542/EX50/EX540/EX542/EX50/EX540/EX542/EX50/EX50/EX50/EX50/EX50/EX50/EX50/EX50			 1.6~ 1.92 @60"(Distance/Width)
0.9 (Distance/Width) (for ES523ST) 9 Projection lens 10 Lamp life 10 Lamp life 10 Lamp life	8	Throw ratio	(for EX540/EX542/EX762/EX540I/EX542I)
9 Projection lens • YM25, F# 2.4~ 2.66, f= 18.2~ 21.8 mm @60" (for EX542/EX540/EX540//EX5421) • YM09X/FPL30, F# 2.41~ 2.55 @60", f= 21.8 ~ 24 mm @60" (for EX612/EX615) • YM43, F# 2.55, f= 10.19 mm (for ES523ST/ EW533ST) 10 2000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX762) • 2500 Hours, 50% Survival Rate (Standard-Mode) (for EX615/EX612) • 3000 Hours, 50% Survival Rate (Standard-Mode) (for EX640/EX542/EX560) • 4000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX540/EX615/EX612) • 3000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX540/EX615/EX612) • 3000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX612/EX615/EX762/EX540//EX542]) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540//EX542]) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540//EX542]) • 112.4%±5% (for ES523ST/EW533ST) 11 Offset • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540//EX542]) • 112.4%±5% (for ES523ST/EW533ST) 12 Video compatibility • NTSC: NTSC M 3.58 MHz, 4.43 MHz • PAL: PAL B/D/G/H//M/N, 4.43 MHz • PAL: PAL B/D/G/H//M/N, 4.43 MHz • Component: 480/p, 576i/p, 720p (50/60Hz), 1080i/p (50/60Hz), (for EX540/EX542/EX612/EX615/EX762/EX540//EX542]) • Component: 480/p, 576i/p, 720p (50/60Hz), 1080i/p (50/60Hz), 1080P(50/60Hz) (for ES523ST/EW533ST) 13 Aspect ratio • 4:3, 16:9, 1, 16:9, 1, NATIVE, AUTO (for EX540/EX542/EX612/EX612/EX612/EX540//EX542]) • 4:3, 16:9, 1, 16:0, 1, NATIVE, AUTO (for EX540/EX542/EX612/EX612/EX612/EX540//EX542]) • 4:3, 16:9, 16:10, Native, Auto (for ES523ST/EW533ST) 14 Lamp • 180 W OSRAM Lamp E20.8 elliptic (for EX540/EX542/EX540//EX542// ES523ST/EW533ST) <t< td=""><td></td><td></td><td> 0.72 (Distance/Width) (for EW533ST) </td></t<>			 0.72 (Distance/Width) (for EW533ST)
9Projection lens(for EX542/EX762/EX540/EX540//EX542/) YM09X/FPL30, F# 2.41~ 2.55 @60", f= 21.8 ~ 24 mm @60" (for EX612/EX615) • YM43, F# 2.55, f= 10.19 mm (for ES523ST/ EW533ST)10Lamp life• 2000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX762) • 2500 Hours, 50% Survival Rate (Standard-Mode) (for EX615/EX612) • 3000 Hours, 50% Survival Rate (Standard-Mode) (for EX640/EX542/LS523ST/EW533ST)10Lamp life• 4000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/LS523ST/EW533ST) • 4000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/LS523ST/EW533ST)11Offset• 115% ± 5% (for EX540/EX542/LS523ST/EW533ST)11Offset• 115% ± 5% (for EX540/EX542/LS523ST/EW533ST)11Offset• NTSC: NTSC M 3.68 MHz, 4.43 MHz • PAL: PAL B/D/G/H/I/M/N, 4.43 MHz • SECAM B/D/G/K/K1/L, 4.25/4.4 MHz • Component: 480i/p, 576i/p, 720p (50/60Hz), 1080i/p (50/60Hz), (for EX540/EX542/EX612/EX615/EX762/EX540/EX542)) • Component: 480i/p, 576i/p, 720p (50/60Hz), 1080i/p (50/60Hz), 1080P(50/60Hz) (for ES523ST/EW533ST)13Aspect ratio• 4:3, 16:9, 1, 10:9 II, NATIVE, AUTO (for EX540/EX542/EX612/EX615/EX762/EX540/EX542)) • 4:3, 16:9, 1, 10:9 II, NATIVE, AUTO (for EX540/EX542/EX612/EX615/EX762/EX540/EX542)) • 4:3, 16:9, 1, 61:0, Native, Auto (for ES523ST/EW533ST)14Lamp• 180 W OSRAM Lamp E20.8 elliptic (for EX540/EX542/EX640/EX542)/ EX542/EX612/EX540/EX542/EX612) • 230 W OSRAM Lamp E20.8 elliptic (for EX615/EX762) • 230 W OSRAM Lamp E20.8 elliptic (for EX615/EX762) • 230 W OSRAM Lamp E20.8 elliptic (for EX615/EX762) • 230 W OSRAM Lamp E20.8 elliptic (for EX615/EX612) • 230 W OSRAM Lamp E20.8 elliptic (for EX762) • 230 W OSRAM Lamp E20.8 elliptic			• 0.9 (Distance/Width) (for ES523ST)
9 Projection lens • YM09X/FPL30, F# 2.41~ 2.55 @60", f= 21.8 ~ 24 mm @60" (for EX612/EX615) • YM43, F# 2.55, f= 10.19 mm (for ES523ST/ EW533ST) • 2000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX762) 10 Lamp life • 2500 Hours, 50% Survival Rate (Standard-Mode) (for EX615/EX612) 10 Lamp life • 000 Hours, 50% Survival Rate(Standard-Mode) (for EX540/EX542/L ES523ST/EW533ST) 11 Offset • 4000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/L ES523ST/EW533ST) 11 Offset • 115% ± 5% (for EX540/EX542/L ES523ST/EW533ST) 11 Offset • 115% ± 5% (for EX540/EX542/EX612/EX542/EX615/EX762/EX540/EX542) 12 Video compatibility • NTSC: NTSC M 3.58 MHz, 4.43 MHz 12 Video compatibility • NTSC: NTSC M 3.58 MHz, 4.43 MHz 13 Aspect ratio • ASSC AM B/D/G/K/K1/L, 4.25/4.4 MHz 14 Lamp • 000000000000000000000000000000000000			
10 (for EX612/EX615) • YM43, F# 2.55, f= 10.19 mm (for ES523ST/ EW533ST) • 2000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX762) • 2500 Hours, 50% Survival Rate (Standard-Mode) (for EX615/EX612) • 3000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX523ST/EW533ST) • 4000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX540/EX515/EX612) • 3000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX540/EX515/EX612) • 3000 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX540/EX515/EX762/EX540//EX542) • 4500 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX612/EX615/EX762/EX540//EX542) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540//EX542) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540//EX542) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540//EX542) • 112.4%±5% (for ES523ST/EW533ST) • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540/EX542) • 0 • NTSC: NTSC M 3.58 MHz, 4.43 MHz • PAL: PAL B/D/G/H//M/N, 4.43 MHz • SECAM: B/D/G/K/K11L, 4.25/4.4 MHz • Component: 480i/p, 576i/p, 720p (50/60Hz), 1080i/p (50/60Hz), (for EX540/EX542/EX612/EX615/EX762/EX540//EX542) • A:3, 16:9 I, In SI II, NATIVE, AUTO (for EX540/EX542/EX612/EX612/EX542/EX540//EX542) • 4:3, 16:9, 1, 16:10, Native, Auto (for ES523ST/EW533ST)			
• YM43, F# 2.55, f= 10.19 mm (for ES523ST/ EW533ST) • 2000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX762) • 2500 Hours, 50% Survival Rate (Standard-Mode) (for EX615/EX612) • 3000 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/EX560/EX533ST) • 4000 Hours, 50% Survival Rate (ECO-Mode) (for EX542/EX540/EX542/EX512) • 3000 Hours, 50% Survival Rate (ECO-Mode) (for EX542/EX540/EX515/EX612) • 3000 Hours, 50% Survival Rate (ECO-Mode) (for EX542/EX540/EX542/EX515/EX512) • 4500 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/EX541/EX533ST) 11 Offset • 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540//EX542I) • 116% ± 5% (for EX540/EX542/EX615/EX762/EX540//EX542I) • Component: 480i/p, 576i/p, 720p(50/60Hz), 1080i/p (50/60Hz), (for EX540/EX542/EX612/EX615/EX762/EX540//EX542I) • Component: 480i/p, 576i/p, 720p(50/60Hz), 1080i/p (50/60Hz), 1080P(50/60Hz) (for EX523ST/EW533ST) 13 Aspect ratio • 4:3, 16:9, 1, 16:9, 1, NATIVE, AUTO (for EX540/EX542/EX612/EX615/EX762/EX540//EX542/) • 4:3, 16:9, 16:10, Native, Auto (for ES523ST/EW533ST) 14 Lamp • 180 W OSRAM Lamp E20.8 elliptic (for EX540/ EX542/EX540// EX542/I ES523ST/EW533ST)	9	Projection lens	
10 Lamp life Lamp life Lamp Lamp Lamp Lamp Lamp Lamp Lamp Lamp Lamp Lamp Lamp Lamp Lamp L			
10Lamp life(for EX540/EX542/EX762)10Lamp life• 2500 Hours, 50% Survival Rate (Standard-Mode) (for EX540/EX542/LS5432T/EW533ST)10• 3000 Hours, 50% Survival Rate (CO-Mode) (for EX542/EX540/EX5412)11• 3000 Hours, 50% Survival Rate (ECO-Mode) (for EX542/EX540/EX5412)11• 4500 Hours, 50% Survival Rate (ECO-Mode) (for EX540/EX542/LS540/EX542/LS53ST)11• 115% ± 5% (for EX540/EX542/LS542/LS540/EX542/LS53ST)11• 115% ± 5% (for EX540/EX542/EX612/EX615/EX762/EX540/EX542)) • 112.4%±5% (for ES523ST/EW533ST)11• Offset11• Offset11• SECAM: SECAM B/D/G/H/I/M/N, 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: 480/p, 576/p, 720p (50/60Hz), 1080/p (50/60Hz) (for EX540/EX542/EX612/EX615/EX762/EX540/EX542) • Component: 480/p, 576/p, 720p (50/60Hz), 1080/p (50/60Hz), 1080P(50/60Hz), 1080/c50/60Hz), 1080/c50/60Hz), 1080P(50/60Hz), 1080/c50/60Hz), 1080P(50/60Hz), 1080/c50/60Hz), 1080P(50/60Hz), 1080/c50/60Hz), 1080P(50/60Hz), 1080/c50/60Hz), 1080P(50/60Hz), 1080/c50/60Hz), 1080P(50/60Hz), 576/c2/EX540/LEX542/LEX540/LEX542			
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• 5 Segments; RGBYW; Filter Diameter 40 mm15 Color Wheel• R76Y32G78W98B76			
15 Color Wheel • R76Y32G78W98B76			
• 2x. 7200 RPM	15	Color Wheel	
			• 2x, 7200 RPM

No	Item	Description
16	System Controller	• DDP2430(for EX540/EX542/EX615/EX612)
16	System Controller	• DDP2431(for EX762 for EX540I/EX542I/ ES523ST/EW533ST)
17	Input Connections	 VGA-in: VGA in 1 (wireless dongle, YPbPr) VGA in 2 (SCART, YPbPr) (for EX540/EX542/EX612/EX615/EX762/EX540I/EX542I) VGA-in: VGA-in x 1 (RGB) (for ES523ST/EW533ST) Composite: RCA x 1 (for EX540/EX542/EX612/EX615/EX762/EX540I/EX542I) Composite video: Composite Video x 1 (for ES523ST/ EW533ST) S-video: Mini-DIN 4 pin x 1 RCA Audio in: RCA Audio in x 2 (R & L) (for ES523ST/ EW533ST) Audio-in (Green coded port): Audio-in 1 only (Daughter Board) (for EX612) Audio-in 1, 2, 3 (Daughter Board) (for EX542/EX615/EX540/EX762/EX540I/EX542I) HDMI: HDMI v1.3 (HDCP) (for EX542/EX615/EX540/EX762/EX540I/EX542I/ES523ST/ EW533ST) Audio-in connectivity grouping (for EX542/EX615/EX540/EX762/EX540I/EX542I) 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	 For EX540/EX542/EX612/EX615/EX762/EX540I/EX542I: 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 For ES523ST/ EW533ST: Operating: 0 ~ 2,500 ft, for 5°C~ 40°C 2500 ft ~ 5,000 ft, for 5°C~ 30°C 5,000 ft ~ 10,000 ft, for 5°C~ 25°C

1-2 Compatible Mode

Computer Compatibility (Analog)

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
	640 x 350	70	31.5
	640 x 350	85	37.9
	640 x 400	85	37.9
	640 x 480	60	31.5
VGA	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
	800 x 600	56	35.2
	800 x 600	60	37.9
SVGA	800 x 600	72	48.1
	800 x 600	75	46.9
	800 x 600	85	53.7
	1024 x 768	60	48.4
XGA	1024 x 768	70	56.5
	1024 x 768	75	60
	1024 x 768	85	68.7
WXGA	1280 x 768	60	47.8
	1152 x 864	60	53.5
	1152 x 864	70	63.8
	1152 x 864	75	67.5
SXGA	1152 x 864	85	77.1
SAGA	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
MAC II 13"	640 x 480	66.68	35
MAC 16"	832 x 624	75	49.725

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

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
	1152 x 864	60	53.5
	1152 x 864	70	63.8
	1152 x 864	75	67.5
SXGA	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.

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 EX542/EX612/EX615/EX540/EX762/EX540I/EX542I/ ES523ST/EW533ST 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

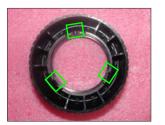
- 1. Loosen 2 screws (as red circle) on the Lamp Module.
- 2. Take off the Lamp Module.



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.







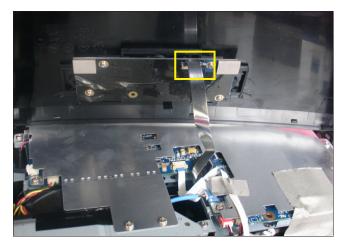
2-5 Disassemble Top Cover Module

- 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

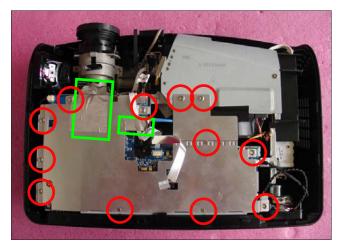
- 1. Unscrew 4 screws (as blue circle) to disassemble the Keypad Board Module from the Top Cover Module.
- 2. Separate the Keypad from the Top Cover Module.
- 3. Unscrew 3 screws (as red circle) to disassemble the Zoom Ring.





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.



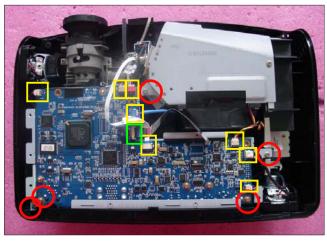




Top Shielding

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.





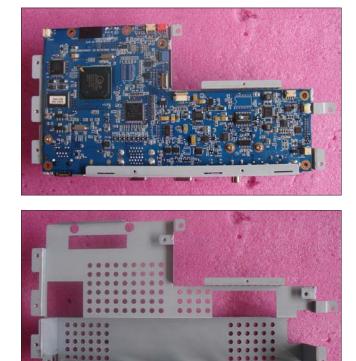
FPC cable

- 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).





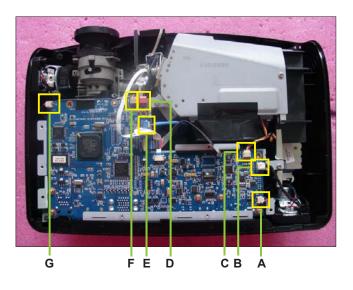
- 7. Separate the Main Board Module and Main Board Shielding.
- Note: Make sure cables plug into the correct ports when assembling the unit.



Main Board Shielding

EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential
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Please refer to the table as below for details of each connector.

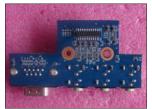


Item	Male Connector on Main Board	The key feature	Figure
A & G	Speaker	Compose of Red/Black Wire and Black wire tube (2 pin)	
В	Lamp Driver	Black wire tube (5 pin)	
С	System Fan	Compose of Red/Yellow/Black Wire (3 pin)	
D	Photo Sensor	Compose of Red/Black/White Wire and Black wire tube (3 pin)	
E	Blower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



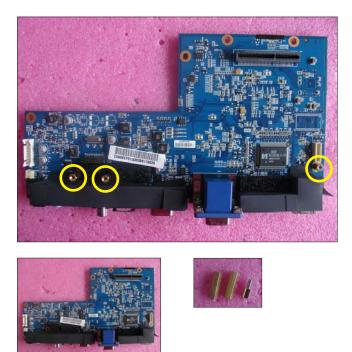


Daughter Board



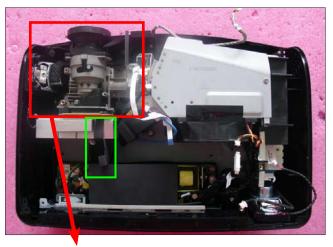
Lan Module Board

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



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.







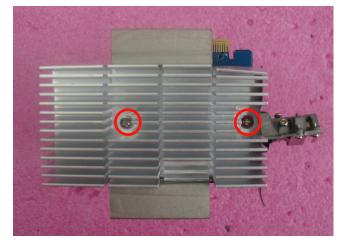


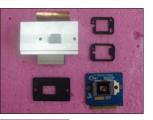
2-12 Disassemble DMD Chip and DMD Board

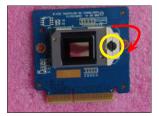
- Unscrew 2 screws (as red circle) to disassemble the Heat Sink and DMD Module.
- 2. Rotate the screw (as yellow circle) clockwise to disassemble the DMD Board and DMD Chip.
- Note: Avoid touching the DMD Chip when you disassemble it.
 - Found that the DMD Chip has scrapes or dirt use of a magnifying 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.

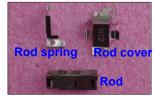


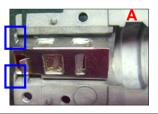


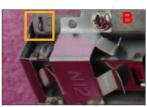








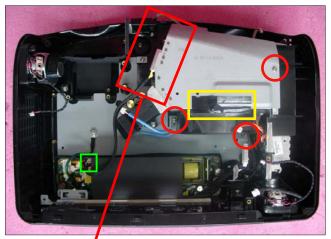




2-14 Disassemble System Fan Module and Thermal Switch

- 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.

















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.

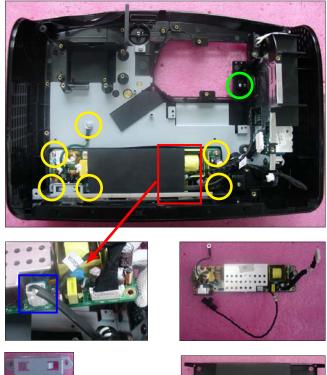




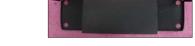


2-18 Disassemble LVPS Module and Interlock Switch

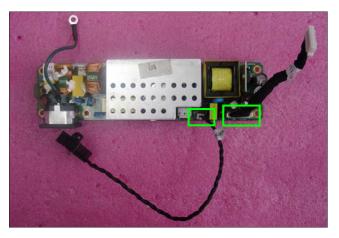
- 1. Unscrew 6 screws (as yellow circle).
- 2. Unplug 1 connector (as blue square).
- 3. Disassemble the LVPS Module, the AC Inlet Bracket and Mylar.
- 4. Unscrew 1 screw (as green circle).







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

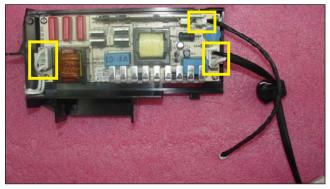




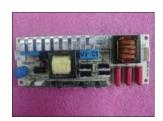
2-19 Disassemble Lamp Driver Module

- 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.









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.
- 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.







Z type driver

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 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.
- 3. Re-write Lamp Hours (ECO)
 - The way of re-write "Lamp Hours (ECO)" is the same as "Lamp Hours (Normal)".
- 4. 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



Trobleshooting

3-1 LED Lighting Message

Message	ON/STANDBY LED (Amber/Green)	Temp LED (Red)	Lamp LED (Red)
Standby State (Input power cord)	(Amber)	Ο	Ο
Power on (Warming)	Flashing (Green)	0	0
Power on and Lamp lighting	(Green)	0	0
Power off (Cooling)	Flashing (Green)	Ο	Ο
Error (Lamp failed)	Flashing (Amber)	Ο	* (Red)
Error (Fan failed)	Flashing (Amber)	Flashing (Red)	Ο
Error (Over Temp.)	Flashing (Amber)	(Red)	0

Note: * Steady light O No light

3-2 Main Procedure

No	Symptom	Procedure
		- Ensure the Power Cord and AC Power Outlet are securely con- nected
		- Ensure all connectors are securely connected and aren't broken
1	No Power	- Check LVPS
		- Check Lamp Driver
		- Check Main Board
		- 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
	Auto Shut Down	- Check Photo Sensor
2		 Check whether Wireless status of OSD Menu is on (conncet 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		
		- Ensure all connectors are securely connected and aren't broken		
		- Check Lamp Cover, Interrupt Switch		
		- Check Lamp Module		
		- Check Lamp Driver		
3	No Light On	- Check LVPS		
		- Check Main Board		
		- Check Color Wheel		
		- Check Photo Sensor Board		
		 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		
4	No Image	- Check Main Board		
	No image	- Check DMD Board		
		- Check DMD Chip		
		- Check Color Wheel		
		- Check Engine Module		
		- Check Color Wheel		
5	Mechanical Noise	- Check Fan Module		
		- Check whether the Main Board and the DMD Board are		
		assembled properly		
6	Line Bar/Line Defect	- Check Main Board		
		- Check DMD Board		
		- Check DMD Chip		

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

No	Symptom	Procedure		
	Remote	- Remote Controller		
		a. Check Battery		
		b. Check Remote Controller		
		c. Check IR Sensor Board		
12	Controller/Control	d. Check Main Board		
	Panel Failed	- Control Panel		
		a. Check FPC		
		b. Check Keypad		
		c. Check Main Board		
	Function Abnormal	- Do "Reset (All data)" of the OSD Menu		
13		- Check Main Board		
		- Check DMD Board		
		- Ensure that the signal cables and source are work as well		
		- Ensure that your Projector is not in "Mute" mode		
14	Audio Abnormal	- Check the interior Speakers of the projector		
	Audio Abriorniai	- Check the exterior Speaker that you are using		
		- Check Main Board		
		- Check Daughter Board		
	Network Fail (for	- Ensure you have set up the right IP address and the		
15	EX542/EX615/	connection is OK (Network green LED should light up)		
	EX540/EX762/ EX540I/EX542I)	- Check Lan Module Board		
	EAJ401/EAJ421)	- Check Main Board		

No	Symptom	Procedure
16	Forgetting Password (Administrator	 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.
	Password)	Image: Control of the security Code (4 digits) Image:
17	3D Image Abnormal (for EX762/EX540I/ EX542I/ES523ST/ EW533ST)	 Ensure the using 3D glasses is good and you must face the projection. Ensure the signal source is 3D format. Ensure the 3D function of projector OSD is on and 3D sync invert is on. Check main board.

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

- EX542/EX612/EX615/EX540/EX762/EX540I/EX542I/ES523ST/EW533ST 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" button 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

- Circumstance brightness: Dark room less than 10.0 lux.

- Inspection distance: 1.8 m~2.5 m functional inspection.

- Screen size: 60 inches diagonal.

- After repairing each unit, a Run-in test is necessary (refer to the below table).

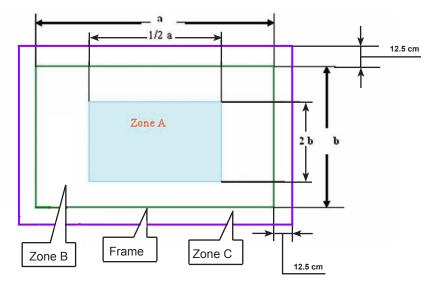
Symptom	Run-in Time
Normal repair	2 hours
NFF	4 hours
Auto shutdown	6 hours

- Get into Burn-In Mode

* Cycle setting is based on the defect symptoms. ie: If it is NFF, the run-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			

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 >

4-5 Defect specification table

For EX762/EX542I/ES523ST

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≤2 (diameter <1/2 inch)
6	Bright blemish (Dirty)	Gray 10 pattern	A+B≤2 (diameter <1/2 inch)
7	Bright dots on frame	Gray 10 pattern	≤1

For EX542/EX612/EX615/EX540/EX540I

Order	Symptom	Pattern	Criteria
1	Bright pixel (dots)	Any pattern	A+B=0
2	Dark pixel(dots)	Any 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 inch)
6	Bright blemish (Dirty)	Gray 10 pattern	A+B≤4 (diameter <1 inch)
7	Bright dots on frame	Any pattern	≤1

EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST	Confidential	4-3
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For EW533ST

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 inch)
6	Bright blemish (Dirty)	Gray 10 pattern	A+B≤4 (diameter <1 inch)
7	Bright dots on frame	Gray 10 pattern	≤1

4-6 Test Inspection Procedure

	Change parts						
Update	Main Board	Firmware	Color Wheel	Lamp Module	Engine Module	Lan Module	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.

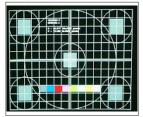
- After changing parts, check the information above.

4-7 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 (for EX542/EX612/EX615/EX762/EX542I/EX540/EX540I) analog 800 x 600 @60Hz (for ES523ST)) analog 1280 x 800 @60HZ (for EW533ST)
 - The defect specification for EX762/EX542I/ES523ST is the same, we take EX762 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.
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.
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.



General-1



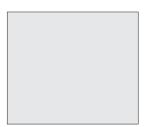
Master

- 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.	Gray 10
	Please refer to the figure in 4-4 Test Condition	
	for Frame and Active area.	
	Note: The defect criteria follows TI specification.	

3. Dark pixel		
Procedure	- Test equipment: video generator.	
	- Test signal: analog 1024x768@60Hz.	
	- Test Pattern: White pattern	
Inspection item	- Dark pixels check.	
	- White pattern (IRE=100)	
	- Adjacent dark pixel.	
Criteria	 The number of the dead pixels should be less or equal to 4 pixels. 	White pattern
	 Adjacent pixel with each other is unacceptable. Note: The defect criteria follows TI specification. 	

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 2 under gray 10 pattern.
	- Ref. Defect specification table





5. Dark Blemish

o. Durk Dichiish		
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 2 under blue 60 pattern.	
	- Ref. Defect specification table	
		Rlup



6. Focus test

Procedure	- Test equipment: video generator. - Test signal: analog 1024 x 768@60Hz - Test Pattern: full screen or MEME Sony
Inspection item Criteria	 Focus check 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.
Inspection item	- Check if each color level is well-functioned.
	- Color saturation
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 apportal please get into ser-

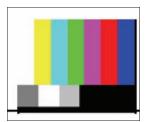
- If color appears abnormal, please get into service mode 1 to do color wheel index adjustment.



Master



64 gray RGBW



SMPTE BAR

4-8 Video Performance

1. CVBS

Procedure

Inspection item

- Test equipment: DVD player
- Test signal: CVBS
- Video performance test



Motion video

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.

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.
	Draga "\/ Kayatana" an ramata controllar, abaal

- 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)

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. 	
	Oh a alku ula atla an Ilmau talli ia na anna al	

- 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 \rightarrow 10" by using the remote controller.
	- Check the sound from speakers.
	- Check whether the "mute" is normal.
	Note: EX542/EX615/EX540/EX762/EX540I/ EX542I have 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: DVD Player
	- Test signal: 1280X720@120Hz (HQFS format CD)
Inspection item	- 3D test
Inspection Distance	- < 6M
Criteria	- The image should not appear noise, flicker,

4-9 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.	SMPTE BA
	(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.	Constanting Party and
Check pattern	- Test signal: 576p, 720p, 1080i	Master
	- 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. 	



TE BAR

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 Calibra- tion". When the message "Success" appears, it means "RGB Calibration" is OK. Choose "Menu" or "Exit" to leave service mode 1.	
Check pattern	- Test signal: 1024 x 768@60Hz	
	- Test pattern: 64 grey RGBW	
	* After finishing RGB adjustment, check 64 gray RGBW pattern.	
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.) 	



White/Black



64 gray RGBW

4-10 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

- Press "Power \rightarrow Left \rightarrow Left \rightarrow 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	1000 ANSI lumen
	(for EX542/EX540/EX540I/EX542I/ES523ST/ EW533ST)

• 1400 ANSI lumen (for EX612/EX615/EX762)

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.
Criteria	• 1600:1 (for EX540/EX542/EX612/EX615/ EX762/EX540I/EX542I)
	• 1750:1 (for ES523ST/EW533ST)



Full black pattern

4. Uniformity

Procedure	- Full white pattern	
	 Use CL100 to measure brightness values of P1~P9 (see image: Full white). 	elle elle
	 Follow the Uniformity formula to calculate average values. 	• 20 • 20 • 20 • 20 • 20 • 20
	Uniformity Formula	29 jui a
	JBMA Uniformity = Avg. (P1, P3, P7, P9)/ P5X100%	Full white pattern
Criteria	• 70%	

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4-11 Network Function Test

For EX540/EX542/EX615/EX762/EX540I/EX542I

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

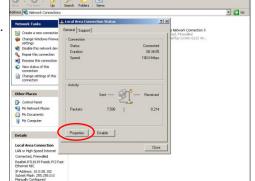
(1) Open the "Local area connection", choose "properties".

(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.

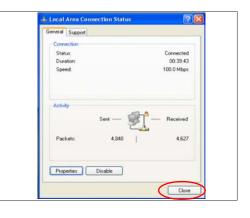
(4) Click "OK".

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



General Authentio	cation Advanced	
Connect using		
Realtek R1	L8139 Family PCI Fast Eth	Configure
This connection u	uses the following items:	
File and Gos Par Install. Description Transmission C wide area netw	Microsoft Networks Printer Sharing for Microsoft N <u>ket Schoduk</u> Protocol ITCP/IPJ Uninstall Ontrol Protocol/Internet Proto ordr. protocol/Internet Proto ordr. protocol Hat provides co interconnected networks.	Properties col. The default
	notification area when connec n this connection has limited o	

	d automatically if your network supports red to ask your network administrator for
Oblain an IP address autor	Choose Contraction of the Contra
 Use the following IP address IP address 	192.168.0.101
Subnet mask:	255 . 255 . 255 . 0
Delault gateway:	
Obtain DNS server address	automatically
• Use the following DNS ser	ver addresses
Preferred DNS server:	
Alternate DNS server:	
	Advanced



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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.

 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	en e	-
Optoma Orenip: OPTO	/eb Server 805	
онир:ОРТО	NIA Harme:EX542 Hing:	
Welcome to	the Optimic Projector Web Server	
	Tagtai Administrator N	
1.0	Logn	



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
Exterior	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.

Firmware Upgrade

Section 1: System Firmware Upgrade (For EX540/EX542/EX612/EX615/EX762/EX540I/EX542I)

5-1-1 Equipment Needed

Software: (DDP 2430-USB/EX540/EX542/EX612/EX615; DDP 2431-USB/EX762/EX540I/EX542I)

- DLP Composer Lite 9.2
- Firmware (*.img)
- Library file (library file has to put in PC and set right path in 5-1-5 step 3)

Hardware:

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

Note: The FW upgrade procedure for EX612/EX615/EX542/EX540/EX762/EX540I/EX542I is the same ,we take EX542 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".



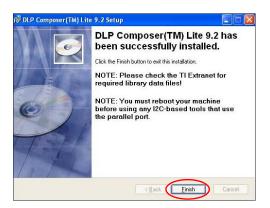


- 5. Click "Next".
- 6. Click "Next".
- 7. The program is executing "installing" status.
- 8. Click "Finish".

lect Features Please select which features you would like	to install.
DLP Composer Lite Tool Suite	Feature Description: DLP Composer Lite Tool Suite
	This feature will be installed on the local hard drive. This feature requires 5841KB on your hard drive.
urrent location: \Program Files\DLP Composer Lite 9.2\	Browse

DLP Composer(TM) Lite 9.2 Setup	
Ready to Install the Application Click Next to begin installation.	<u>e</u>
Click the Back button to reenter the installation information or click Cancel to the wizard.	exit
\sim	
< Back (Next >	Cancel

문 DLP Composer(TM) Lite 9.2 Setup	
Jpdating System The features you selected are currently being installed.	Q
Copying new files File: DLPLite.exe Directory: E: VProgram Files\DLP Composer Lite 9.2\ Size: 2142208	
	Cancel



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5-1-3 Setup Procedure

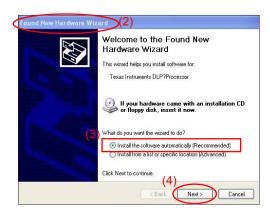
- 1. Set up
 - Hold on "MENU" and "POWER" buttons and plug in the power cord.
 - The ON/STANDBY LED will be flashing green.
 - Release "MENU" and "POWER" buttons.
 - Connect projector with USB cable.
- Note: The system fan and the lamp will not operate.

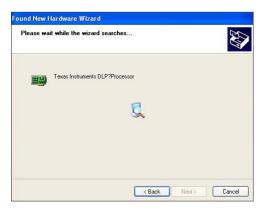




5-1-4 USB Driver Upgrade Procedure

- 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.

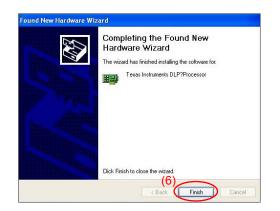


1. Execute the "DLP Composer[™] Lite 9.2" file.

2. Click "Edit" and "Perferences".



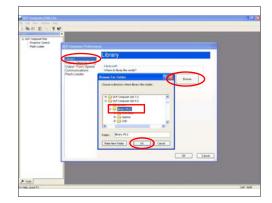


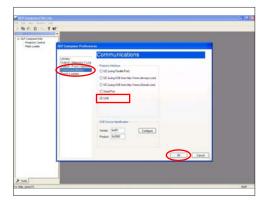


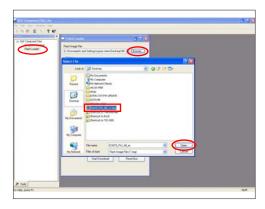
	er(TM) Lite	
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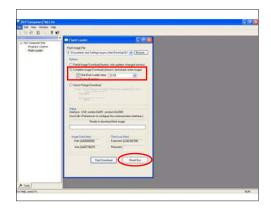


- 3. Click "Library".
 - Click the "Browse" and navigate to the directory where you put the DLP Composer installation files in.
 - Click "Library v9.2" folder.
 - Click "OK".
- 4. Click "Communications".
 - Select "USB".
 - Click "OK".
- 5. Choose "Flash Loader".
 - Click "Browse" to search the firmware file (*.img).
 - Click "Open".
- 6. Select "Skip Boot Loader Area". (select "32KB").
 - Click "Reset Bus" to erase the flash memory.

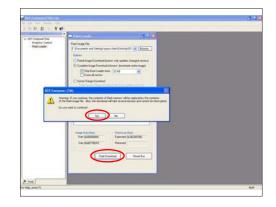


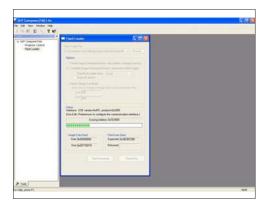






- 7. If the FW is ready, click "Start Download" to execute the firmware upgrade.
 - Click "Yes".
- 8. Proceeding Picture.
- 9. It takes about several minutes, the firmware upgrade process is finished, "Download completed" will appear on the screen.
 - The projector will automatically turn on.
 - Unplug 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.)









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Section 2: System Firmware Upgrade (For ES523ST/EW533ST)

5-2-1 Equipment Needed

Software: DDP 2431-RS232

- DLP Composer Lite 9.2
- Firmware (*.img)
- Library file (library file has to put in PC and set right path in 5-1-5 step 3)

Hardware:

- Projector
- Power Cord: 42.50115G001
- RS232 Cable: 42.00272G002
- PC or Laptop
- *Note: The FW upgrade procedure for EW533ST is the same ,we take ES523ST as an example here.*



5-2-2 DLP Composer Lite Setup Procedure

Note: "DLP Composer Lite V9.2 Setup" Program refer to 5-1-2 for details.

5-2-3 Setup Procedure

- 1. Set up
 - Plug in Power and RS232 cable in the PC, the ON/ STANDBY LED will display green.
 - Hold the "Menu" then press "Power" button about 5 seconds then release these two buttons.
- Note: The system fan and the lamp will not operate.





5-2-4 Firmware Upgrade Procedure

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

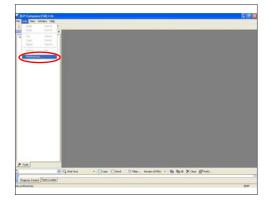


2. Click "Edit" and "Perferences".

- 3. Click "Library".
 - Click the "Browse" and navigate to the directory where you put the DLP Composer installation files in.
 - Click "ES523ST Library" folder.
 - Click "OK".

- 4. Click "Communications".
 - Select "Serial Port".
 - Choose "COM1".
 - Click "OK".

- 5. "Serial Port Configuration" picture will appear on the screen.
 - Make sure the settings are as below:
 - (1) In "Baud Rate" item, select "115200".
 - (2) In "Data Bits" item, select "8".
 - (3) In "Stop Bits" item, select "1".





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		LDHS (No hard)		Cent

- (4) In "Parity" item, select "None".
- (5) In "RTS" item, select "Disable".
- (6) In "CTS" item, select "Disable".
- (7) Key in "2000" into "Read" and "Write" items of " Timeouts (in milliseconds)".
- Click "OK".

		56000	Enable	Toggle
			CTS	
) 115200	 Disable 	O Enable
O7 08	Stop Bits		Timeouts (in milli Read: 2000	write: 2000
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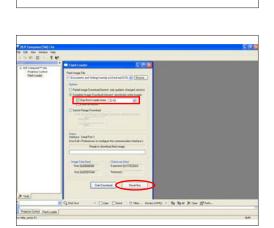
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6.	Click	"OK".

- 7. Choose "Flash Loader".
 - Click "Browse" to search the firmware file (*.img).
 - Click "Open".

- 8. Select "Skip Boot Loader Area". (select "32KB").
 - Click "Reset Bus" to erase the flash memory.



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- 9. If the FW is ready, click "Start Download" to execute the firmware upgrade.
 - Click "Yes".

10. Proceeding Picture.

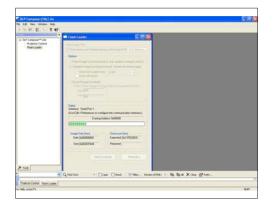
- It takes about several minutes, the firmware upgrade process is finished, "Download completed" will appear on the screen.
 - The projector will automatically turn on.

- 12. Check FW version.
 - Get into the service mode to check the firmware version.

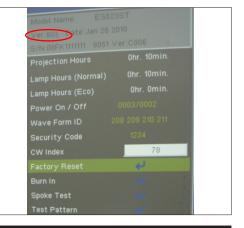
(To get into service mode, please press "Power", "Left", "Left" and "Menu" buttons sequentially.)











Section 3: 8051 Firmware Upgrade Procedure

5-3-1 Equipment Needed

Software: (DDP 2430-USB/EX540/EX542/EX612/EX615;

DDP 2431-USB/EX762/EX540I/EX542I/ES523ST/EW533ST)

- Setup _NLINK_en
- Manley USB Driver_NLINK
- EX542/EX612/EX615_8051_xxx.hex
- EX540_8051_xxx.hex
- EX762_8051_xxx.hex
- EX540I/EX542I_8051_xxx.hex
- ES523ST/EW533ST_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/EX542/EX540/EX762/EX540I/EX542I/ ES523ST/EW533ST is the same, we take EX542 as an example here.

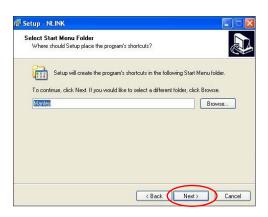


5-3-2 NLINK Setup Procedure

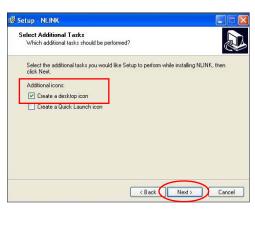
- 1. Choose "setup_NLINK_en.exe" program.
- 2. Click "Next".
- 3. Click "Next".
- 4. Click "Next".







- 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.



Re	ady to Install
	Setup is now ready to begin installing NLINK on your computer.
	Click Install to continue with the installation, or click Back if you want to review or change any settings.
	Destination location: C:\Program Files\Manley\NLINK
	Start Menu folder: Manley
	Additional tasks: Additional icons: Create a desktop icon Create a Quick Launch icon
	× (3)



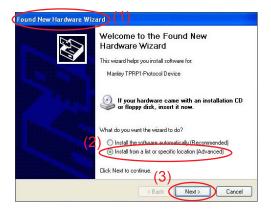


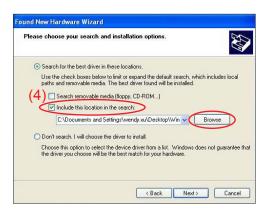
EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST	Confidential	5-15
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5-3-3 Manley USB Driver Upgrade Procedure

- 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.

Nease choose your search	h and installation options.
Search for the best drive	er in these locations.
	elow to limit or expand the default search, which includes local adia. The best driver found will be installed.
Search removable	e media (floppy, CD-ROM)
Include this locati	ion in the search:
C:\Documents ar	nd Settings\wendy.xu\Desktop\805 💌 🛛 Browse
O Don't search. I will choo	ise the driver to install.
Choose this option to se the driver you choose w	lect the device driver from a list. Windows does not guarante ill be the best match for your hardware.
	(7)
	<back next=""> Cance</back>
	stalls the software
Manley TPRP1 Protoco	<u></u>
Manley TPRP1 Protoco	si Emulator An divare Installation
Manley TPRP1 Protoco	S Emulator
Manley TPRP1 Protoco	of Emulator ar dware Installation
Manley TPRP1 Protoco	St Emulator and Aware Installation And Aware Installation
Manley TPRP1 Protoco	St Emulator andware Installation The toftware you are installing for this hardware: Marking TPRPI Protocol Emulator has not passed Windows Logo testing to verify its comparised with Workware SP. (Edma and this hardware may in urd establishes the course of parison of your system or destablishes the course of parison of your system
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Manley TPRP1 Protoco	St Emulator Andware Installation Analysis TEREPT-Protocol Emulator Moniny TEREPT-Protocol Emulator Continuing your installation of this software may in or destablisher the concerned operation of your system or constallations the hardware confort in the later is installation nore an or constant the hardware versite operation of your system or constant the hardware versite installation on the ac passed Windows Lego testing. (8)
Manley TPRP1 Protoco	St Emulator Andware Installation Analysis Teleformation The software you are installing for this hardware: Moniny TPHPIP Protocol Emulator Moniny TPHPIP Protocol Emulator Continuing your installation of this software may in or destablisher the correct operation of your system or conduct the hardware events for software hardware conduct the hardware events for software hardware conduct the hardware events for software hardware (8)
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Marley TPHPI-Protect	A Emulator Andware Installation The software you are installing for this hardware. Moniny TPRPT Protocol Emulator Anony TPRPT Protocol Emulator Continuing your installation of this software may are the this laterois in moderal. In or destablisher the correct operation of two are yet recommends the hardware version for software the hardw

Manley TPRP1-Protocol Emul

(9)

Finish

Click Finish to close the

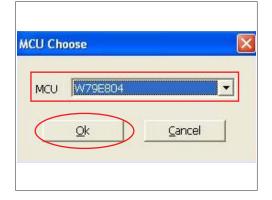
5-3-4 8051 Firmware Upgrade Procedure

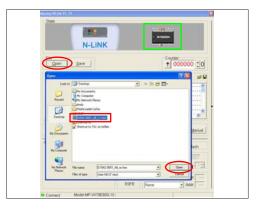
1. Execute 8051 FW Program

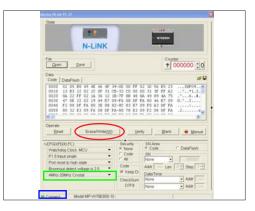
- Double click "NLINK V1.2" to execute NLINK program.

- 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(<u>W</u>)" to execute 8051 FW upgrade.









EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential 5-18

- 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.)

State	
N-LINK	and the second s
File 	Counter ↑ 000001 :0
Data Code DataFlash	a 12
0020 0A 22 FF 02 1A 36 12 1 0030 47 0E 22 02 19 49 E7 0 0040 F2 08 DF FA 80 3E 88 8	39-60 GO FF 62 10 56 E5 22 18009 62-82 CO 60 GO 31 3F FF A7
Operate Brad Erase/Write(W)	L Bank Manual
UCFG0(PD00 FC) Vistchdog Olock MCU • P15 knock sindle • Post resist to high statle Brownout direct voltage is 2.5 • dMHz-25MHz Cristal •	Security St Area * None * Code * Code * DataFlash * Code # * Rep.D 000001 * Kep.D 248 Ottockum None Ottockum None OFF3 None

Model Name: EX5	
Version : B04T . 805	1 Ver : B002
S/N:08EF1111111	
Projection Hours	
Lamp Hours (Normal)	8.4
Lamp Hours (Eco)	
Power On/Off	
Wave Form ID	
Security Code	
CW Index	60
Factory Reset	
Burn In	
Spoke Text	
Test Pattern	
ADC/DEC Color	
2430 Color	
Error Log	

Section 4: Network Firmware Upgrade Procedure (for EX542/EX615/EX540/EX762/EX540I/EX542I)

5-4-1 Equipment Needed

Software:

- EX542_LAN Module FW_xxx.bin (*.bin)

Hardware:

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

Note: The Network FW Upgrade Procedure for EX615/EX542/EX540/EX762/EX540I/EX542I is the same, we take EX542 as an example here.



EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential 5-20

5-4-2 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.



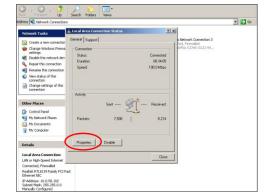






5-4-3 Network Setting

- 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.



General Authentication	Advanced	
Connect using		
Realtek RTL813	9 Family PCI Fast Eth	Configure
This connection uses th	e following items:	
Oos Packet S Oos Packet S Install. Description Transmission Control	Sharing for Microsoft Net checkder Uninstal Uninstal Protocol/Internet Protoco otocol that provides come	Properties A. The default
	tion area when connecte connection has limited or	

General		
You can get IP settings assigned this capability. Otherwise, you nee the appropriate IP settings.	automatically if your network, supports ed to ask your network, administrator fo	DF
Obtain an IP address autom	atically	
 Use the following IP address 	-	-
IP address:	192.168.0.101	
Subnet mask:	255.255.255.0	
Default gateway:	· · · · ·	
Obtain DNS server address	automatically	
O Use the following DNS serve	er addressez	
Preferred DNS server:		
Alternate DNS server:	1. A. A.	
	Advanced.	

General Authentication	Advanced	
Connect using:		
Realtek RTL813	19 Family PCI Fast Eth	Configure
This connection uses t	he following items:	
Clent for Micro Clent	r Sharing for Microsoft icheduler	Networks
Install	Uninstall	Properties
Allows your compute network.	r to access resources	on a Microsoft
Show icon in notific	ation area when conne connection has limited	
		cancel

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5-4-4 PC Hardware Link

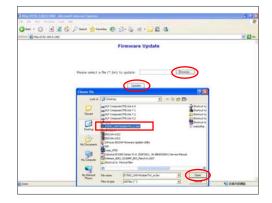
- 1. Execute "Internet Explorer".
- 2. Visit "http:// 192.168.0.100/tgi/fu.tgi" to get into Firmware Update screen.

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.



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lease waiting a minute, of click button to next step.		
Continue		
	(*****	S CANERS



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	Firmware Update	
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	Vipdate	
	(it may take 60 seconds.)	
	Please DO NOT externation	
being page help (710, 188, 8, 000) pillargineting		INNER P

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- 5. Click "Re Login".
- 6. Firmware upgrade procedure completes.
 - The projector Network FW version will appear.

Fis ER the Faculty link this	1011
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Ontone	Projector Web Server A03
Optoma	Group:OPTOBIA Name:EX542 Mig:
Home	trol Panel Network Setting Alert Setting Logout
	Welcome to Optoma Projector Web Server
	#*.192.168.0.100
ector Status	

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/EX542/EX540/EX762/EX540I/EX542I is the same, we take EX542 as an example here.
- The EDID Upgrade procedure for ES523ST/EW533ST is the same, we take ES523ST as an example here.

EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidentia	al 6-1
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6-2 Equipment Needed (for EX542/EX615/EX540/EX762/EX540I/EX542I)

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



EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential 6-2

6-3 Setup Procedure (VGA) (for EX542/EX615/EX540/ EX762/EX540I/EX542I)

- 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.



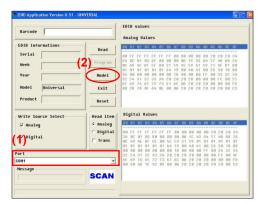


6-4 EDID Key-In Procedure (VGA-1 & VGA-2) (for EX542/EX615/EX540/ EX762/EX540I/EX542I)

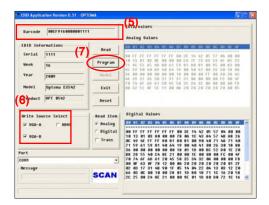
- 1. Execute EDID Program
 - Double click "EDID" to execute EDID program.

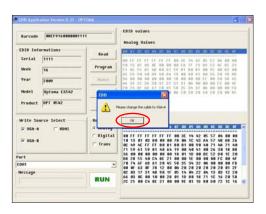


- 2. Process
 - (1) Select the COM Port which you are using.
 - (2) Click "Model".
 - (3) Select the EDID file (*.ini).
 - (4) Click "Open".
 - (5) Key in the Serial Number into the Barcode blank space.
 - (6) In "Write Source Select" item, select "VGA-A" and "VGA-B".
 - (7) Click "Program".









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

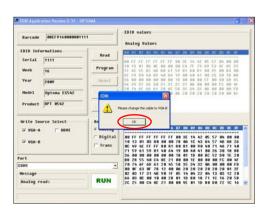
EX540/EX542/EX612/EX615/EX762EX540I/EX542I/ES523ST/EW533ST Confidential 6-4

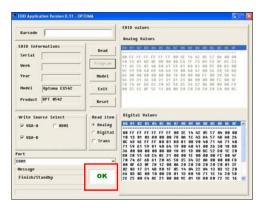
- 4. Change the cable to VGA-B
 - When the message "Please change the cable to VGA-B" appears on the screen, click "OK".

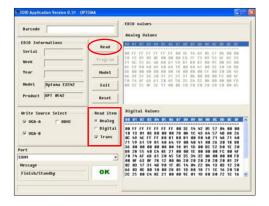
5. When the EDID program is completed, a message "OK" will appear on the screen.

- 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.







Barcode		EDID values Analog Values
EDID Informations	Read	00 41 42 42 40 10 10 45 40 10 40 40 40 40 40 40 40 40 40
Veek 16	Program	18 11 81 81 80 00 10 80 80 80 81 77 73 87 53 47 85 20 11 45 55 85 46 80 81 59 81 80 81 80 81 80 55 80 82 80 45 57 98 40 89 40 40 40 10 10 40 41 80 24 20 10 80
Year 2009	Hodel	16 80<
Hodel Optona EX542	Exit	08 32 55 87 52 11 00 88 28 76 29 20 20 28 88 85
Product OPT 0542	Reset	
Write Source Select Read item		Digital Values
IP UCA-A IT HONE	I Analog C Digital	
17 UCA-11	17 Trans	
Port		
30H1	•	
Hessage Finish/Standby	OK	

6-5 Equipment Needed (for ES523ST/EW533ST)

Software

- EDID Program
- EDID File (*.ini)

Hardware

- Projector
- Power Cord for Projector (42.53506G002)
- VGA Cable (42.87305G102)
- 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



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6-6 Setup Procedure (VGA) (for ES523ST/EW533ST)

- 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-IN Port of projector by VGA Cable.
 - (3) 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.

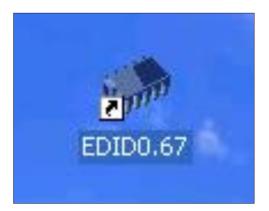




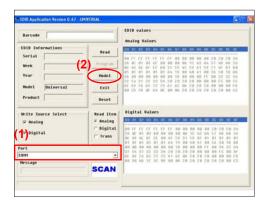
6-7 EDID Key-In Procedure (VGA-1 & VGA-2) (for ES523ST/EW533ST)

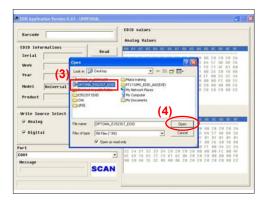
Execute EDID Program

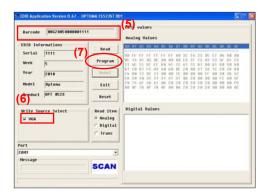
 Double click "EDID" to execute EDID program.



- 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".
 - (7) Click "Program".









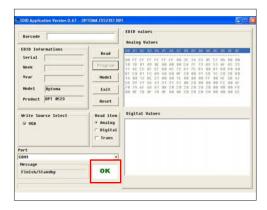
- 3. Change the cable to VGA
 - When the message "Please change the cable to VGA" appears on the screen, click "OK".

EX540/EX542/EX612/EX615/EX762EX540I/EX542I/ES523ST/EW533ST Confidential 6-8

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

- 5. Read EDID "VGA" information
 - In "Read item", select "Analog" and "Trans", then click the "Read".

6. EDID information will show the result.



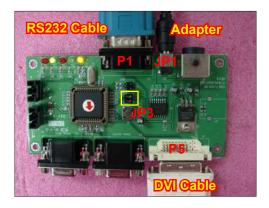
Barcode J		EDID values Analog Values
EDID Infernations Serial 1111 Week 5 Year 2010 Nodel Optona Product OPT 0523	Read Program Hodel Exit Reset	$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $
Write Source Select ତ UGA	Read item ⇒ Analog ← Digital ⊕ Trans	Digital Values
hert	_	4
cons Hessage	•	
Finish/Standby	OK	

Barcode	-	-EDID values Analog Values
EDID Informations Serial 1111	Read	000 01 02 02 00 00 05 05 07 00 09 00 00 0C 00 0C 0
Week 5	Program	105 14 01 02 00 00 00 00 00 00 77 73 07 53 W 05 21 11 MC 55 07 17 09 40 40 10 10 10 10 10 10 10 10 10 10
Year 2018	Hodel	81 C8 M1 FC A9 A0 A0 A7 29 40 31 58 1C 20 28 80 16 A0 12 8C 21 40 50 15 80 40 67 F0 30 36 38 47 50 30 30 55 21 31 21 31 80 20 80 80 80 80 80 60 4F
Hodel Optona	Dait	78 7A 67 40 61 80 20 20 20 20 20 20 20 80 80 80 87 08 87 78 87 78 87 90 80 20 20 20 20 20 80 80 80 80 80
Product OPT 8523	Reset	
Write Source Select 9 UCA	Read iten ∲ Analog ← Digital ₽ Trans	Digital Values
Port		
COH1 Message	-	
Finish/Standby	OK	

6-8 Setup Procedure (HDMI) (for EX542/EX615/EX540/ EX762/EX540I/EX542I)

- 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.



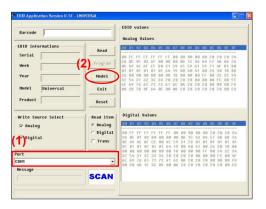


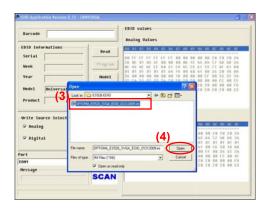
6-9 EDID Key-In Procedure (HDMI) (for EX542/EX615/EX540/ EX762/EX540I/EX542I)

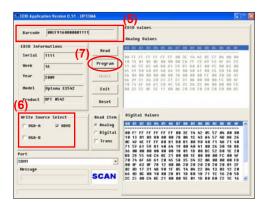
- 1. Execute EDID Program
 - Double click "EDID" to execute EDID program.

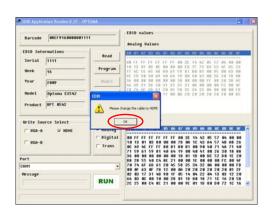


- 2. Process
 - (1) Select the COM Port which you are using.
 - (2) Click "Model".
 - (3) Select the EDID file (*.ini).
 - (4) Click "Open".
 - (5) Key in the Serial Number into the Barcode blank space.
 - (6) In "Write Source Select" item, select "HDMI".
 - (7) Click "Program".



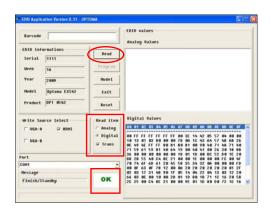






- 3. Change the cable to HDMI
 - When the message "Please change the cable to HDMI" appears on the screen, click "OK".

- 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.



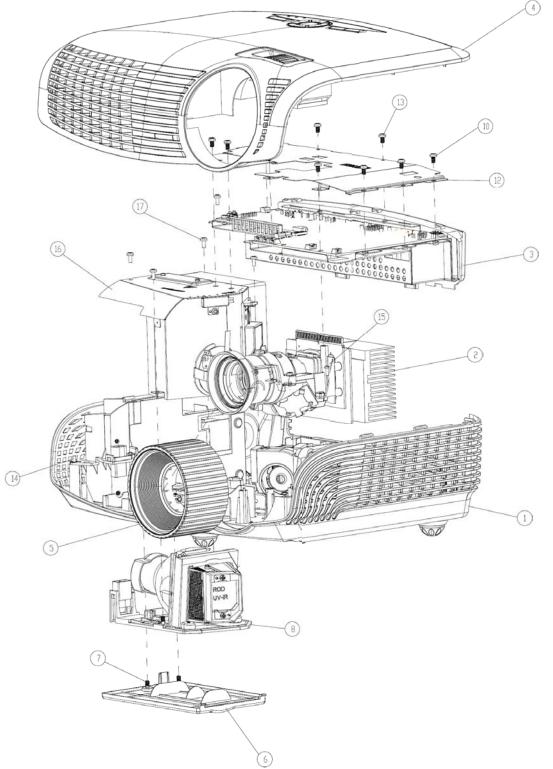
Barcode		EDID values
EDID Informations		Analog Values
Serial 1111	Read	
Week 16	Pragram	
Year 2009	Hode1	
Hodel Optuma EX542	Exit	
Product OPT 85%2	Reset	
Write Source Select	Read item	Digital Values
T VCA-A IZ HOHI	C Analog	00 01 02 03 04 05 06 07 00 07 08 06 06 06 0F
	@ Digital	00 TF FF FF FF FF FF 00 3E 14 42 05 57 04 00 00
T VGA-8	🖓 Trans	10 13 01 03 00 00 00 70 00 10 43 04 57 40 08 26 00 49 40 FF FF 88 81 80 81 00 90 40 71 56 71 48
	The second se	71 59 61 59 81 48 64 19 88 48 41 88 26 38 18 88
ort		26 00 00 00 00 00 00 18 01 10 00 UC 52 00 1E 20 88 28 55 40 CA 8E 21 00 00 1E 00 00 00 FC 00 AF
0H1		70 74 6F 6D 61 20 45 58 35 34 32 00 08 00 00 FD
Nessage		08 0F 63 0F 78 12 08 08 28 28 28 28 28 28 81 2F 82 83 17 31 48 98 1F 85 16 86 22 86 13 83 12 28
Finish/Standby	OK	66 83 8C 88 18 88 28 81 10 88 18 71 1C 16 28 58
		2C 25 88 CA 8E 21 88 88 9E 81 10 88 88 72 1C 16 ¥

EX540/EX542/EX612/EX615/EX762EX540I/EX542I/ES523ST/EW533ST Confidential 6-12

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.



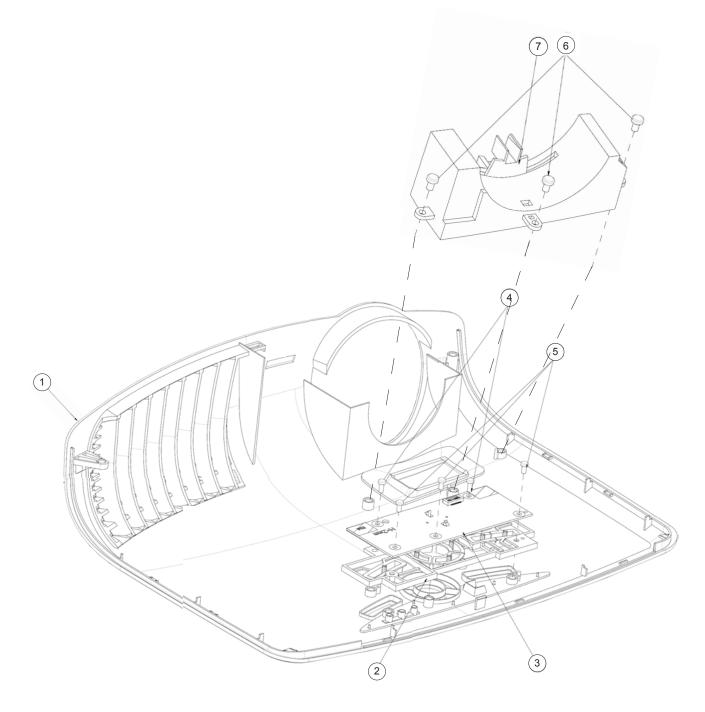
EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential

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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.8EF01GC01	LAMP MODULE FOR PROJECTOR EX542	V
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	

EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST	Confidential	II
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Assy TOP COVER MODULE

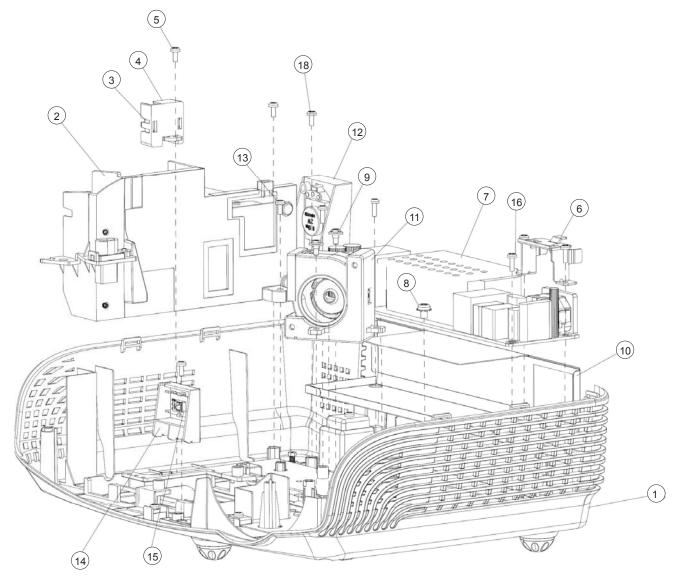


EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST	Confidential	
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Item	P/N	Description	Parts Supply
1	75.8EF01G002	TOP COVER ASSEMBLY EX615	V
2	51.8EG14G011	KEYPAD PLATE ENTER EX612	
3	80.8EF03G001	PCBA KEY PAD BOARD FOR EX615	V
4	85.1A123G050	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	

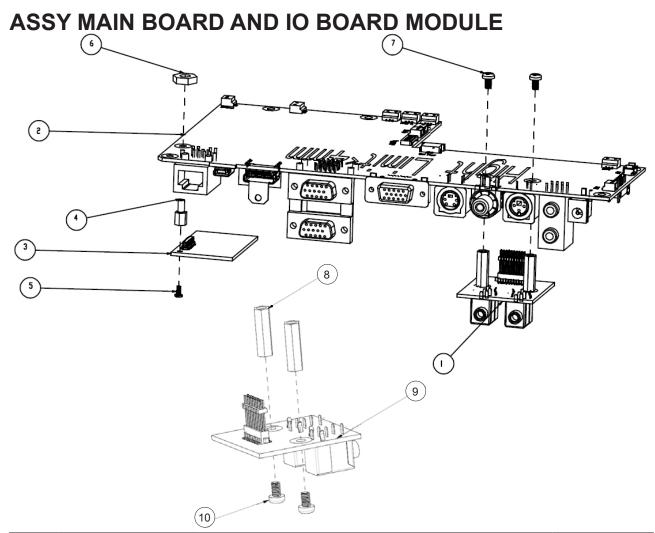
EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST	Confidential	IV
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ASSY BOTTOM COVER MODULE



EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST	Confidential	V
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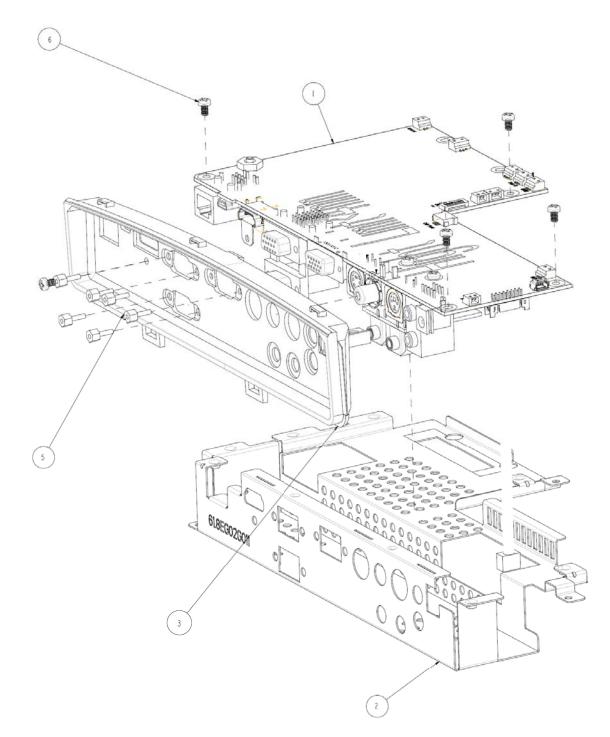
Item	P/N	Description	Parts Supply
	70.8EF37GR01	ASSY BOTTOM COVER MODULE FOR EX615 (SERVICE)	V
1	51.8EG01G011	BOTTOM COVER MN3600H BLACK EX612	
	70.8EJ01GR01	ASSY OSRAM LAMP DRIVER 230W FOR EX542 (SERVICE)	V
	70.8EF38GR01	ASSY OSRAM LAMP DRIVER 230W FOR EX615 (SERVICE)	V
2	75.8BW01G002	ASSY OSRAM LAMP 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	75.8CT02G001	ASSY MATRITEK 180/200W LVPS FOR HORUS (EX542)	V
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	



Item	P/N	Description	Parts Supply
1	70.8EF09G001	IO BOARD ASSEMBLE EX612	
	70.8EJ03GR01	ASSY PCBA MAIN BOARD FOR EX542 (SERVICE)	V
	80.8FK01G001	PCBA MAIN BD FOR EX612	V
	70.8EF43GR01	ASSY PCBA MAIN BOARD FOR EX615 (SERVICE)	V
2	80.8EF01G003	PCBA MAIN BD FOR EX615	
3	80.8EF07G001	PCBA LAN MODULE BD FOR EX615/EX542	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	80.8EF06G003	PCBA DAUGHTER BD FOR EX612	V
9	80.8EF06G002	PCBA DAUGHTER BOARD FOR EX615/EX542	V
10	85.1A123G050	SCREW PAN MECH M3*5 Ni	

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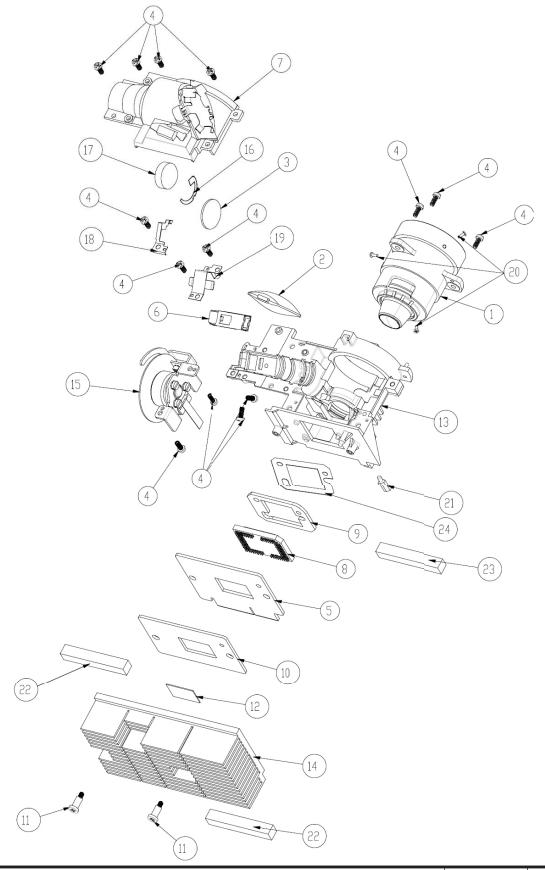
ASSY MAIN BOARD MODULE



EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential VIII

Item	P/N	Description	Parts Supply
1	70.8EF26G001	MAIN BOARD IO BOARD ASSY EX612	
2	61.8EG02G011	MAIN BOARD SHIELDING EX612	
	70.8EJ04GR01	ASSY IO COVER MODULE FOR EX542 (SERVICE)	V
	70.8FK02GR01	ASSY IO COVER MODULE FOR EX612 (SERVICE)	V
	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	

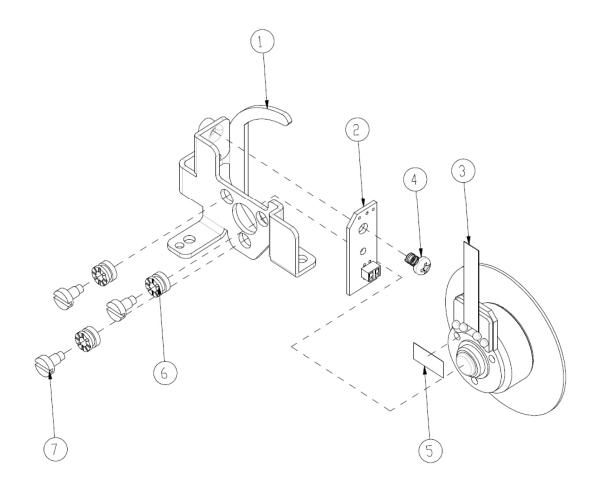
ASSY OPTICAL ENGINE MODULE



EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential X

Item	P/N	Description	Parts Supply
1	23.8BA01G001	PROJECTION LENS YM25	
2	70.8EG18G001	ASSY RELAY MODULE HD20	
	70.8EJ02GR01	ASSY OPTICAL ENGINE MODULE EX542 (SERVICE)	V
	70.8FK03GR01	ASSY OPTICAL ENGINE MODULE EX612 (SERVICE)	V
	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	

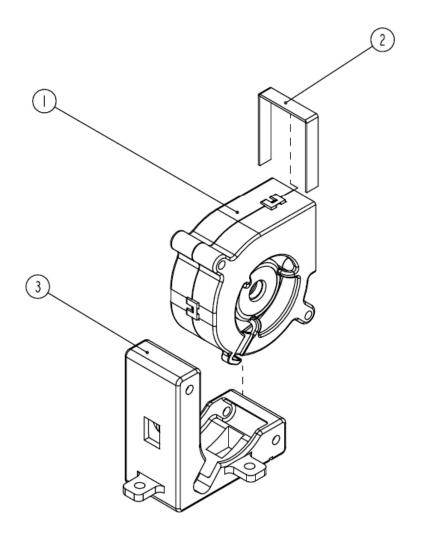
ASSY COLOR WHEEL MODULE



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 MO- TOR)	
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	

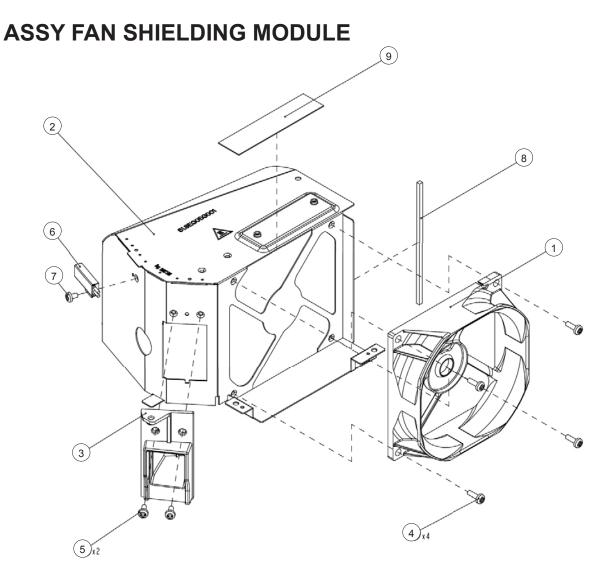
EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential XII

ASSY BIOWER MODULE



Item	P/N	Description	Parts Supply
1	49.8EF04G001	SUNON 45*20mm GB1245PKVX-8 F-TYPE BLOWER (EX542)	V
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	

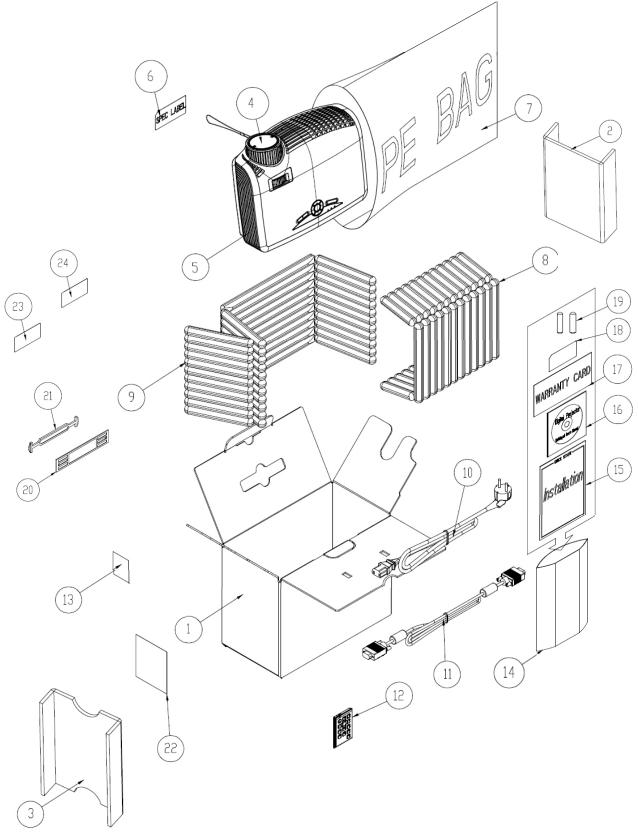
EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential XIII



Item	P/N	Description	Parts Supply
1	49.88T01G001	SUNON, KDE1207PKV1-A 70*70*20mm AXIAL FAN (EX542)	V
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	43.8EF17G001	THERMAL SWITCH WITH BRACKET (KLIXON YS11) EX542 85C (EX542)	V
6	43.8EG17G001	THERMAL SWITCH WITH BRACKET (KLIXON YS11) HD20 100C (EX612/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	

EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential XIV





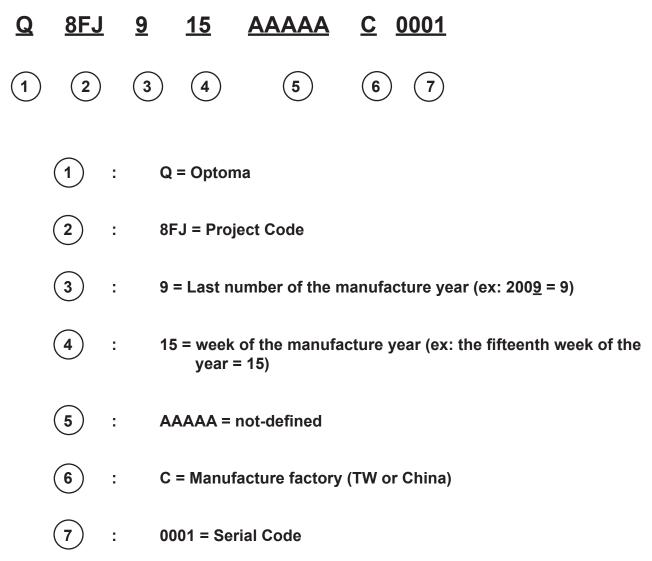
EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential XV

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	
	45.8EF02G001	REMOTE CONTROLER OF EX612 WITHOUT LASER	V
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 EX542/EX612/EX615	
	36.8FK01G001	USER'S GUIDE MULTILINGUAL (CD) OPTOMA EX612	V
16	36.8EF01G001	USER'S GUIDE MULTILINGUAL (CD) OPTOMA EX542/EX615	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 EX542 as example)

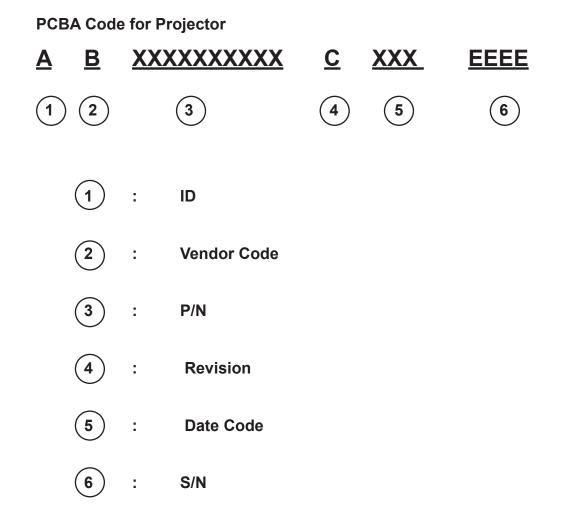


EX: Q8FJ915AAAAAC0001

This label "Q8FJ915AAAAAC0001" represents the serial number for EX542. It is produced at CPC on ffifteenth of 2009. Its serial code is 0001.

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II. PCBA Code Definition



EX540/EX542/EX612/EX615/EX762/EX540I/EX542I/ES523ST/EW533ST Confidential