Acer PD520
Service Guide

Service CD P/N: **Please refer to VD.P31VH.001**

Revision History

Please refer to the table below for the updates made on Acer Altos PD520 service guide.

Date	Chapter	Updates

Copyright

Disclaimer

Conventions

The following conventions are used in this manual

:

`Screen messages`	Denotes actual messages that appear on screen.
NOTE	Gives bits and pieces of additional information related to the current topic.
WARNING	Alerts you to any damage that might result from doing or not doing specific actions.
CAUTION	Gives precautionary measures to avoid possible hardware or software problems.
IMPORTANT	Reminds you to do specific actions relevant to the accomplishment of procedures.

Preface

Before using this information and the product it supports, please read the following general information.

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for Acer's "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.

2. Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. If, for whatever reason, a part number change is made, it will not be noted in the printed Service Guide. For ACER-AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

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System Introduction

Technical Specification

Optical Features

Item	Description
Projection Lens	F/2.44~2.69, f=28.8~34.5mm. 1.2X Manual Zoom Lens
Projection Image Size	Adjustable from 23.4" to 295.3" (Diagonal) (Suggested Projection Image Size : 36.9"~245.9")
Throw Distance	1.4m~12m (Suggested throw distance : 1.5~10m) (Marketing Spec. - 1.14m~12m)
Brightness	1300 ANSI Lumens (Marketing)
	1150 ANSI Lumens (Average)
	1000 ANSI Lumens (Minimum)
Contrast	1600 : 1 Marketing (Full White and Black)
	1450 : 1 Typical (Full White and Black)
	1300 : 1 Minimum (Full White and Black)
Uniformity	85% Marketing (Japan Standard)
	75% Typical (Japan Standard)
	65% Minimum (Japan Standard)
Color Temperature	7500°K (Default)
	7000 to 8800°K (Min. to Max.)

Mechanical Features

Item	Description
Dimensions (W x H x D)	- 9.68 x 8.05 x 2.8 +/- 0.034 inches (246 x 204.4 x 71.2 +/- 1mm, w/o lens)
	- 9.68 x 8.73 x 3.1 +/- 0.034 inches (246 x 221.7 x 78.6 +/- 1mm, with lens)
Weight	Approx. 3.9 lbs.
Tilt Angle	8 degree with elevator mechanism
Keystone correction	+/- 16 degree (32 degree)
Lamp Door Protection	Lamp power supply shut off automatically when door open

Electrical Features

Item	Description
Power Supply	Universal AC 100-240V ~ 50/60Hz with PFC input
	(Wattage to be determinate) for 150W Compact P-VIP Lamp@normal operation
	Variance FAN speed control (Depend on temperature variant)
Power Consumption	190 Watt +/- 10% at normal operation Standby mode < 35W
Terminals	Computer Input (VESA M1-DA Female Terminal x 1)
	Composite Video Input (RCA jack x 1)
	S Video Input (Mini DIN 4-pin x 1)
	Audio line Input (3.5mm phone jack x 1)
	Monitor Output (D-Sub 15-pin female terminal x 1)
Input signal spec.	Hsync Frequency 15 ~ 100 kHz
	Vsync Frequency 43 ~ 120 Hz
	Video Signal RGB (PC) Analog RGB 0.7Vp-p, 75 ohm Analog RGB 1Vp-p, 75 ohm, Sync. signal Separate TTL H, V Sync. Composite TTl Sync.
	Video Composite video 1Vp-p, 75 ohm S-video Luminance 0.714Vp-p, 75 ohm Chrominance 0.286Vp-p, 75 ohm
Video Compatibility	Standards : NTSC - M(3.58 MHz), 4.43 MHz, PAL - B, D, G, H, I, M, N SECAM - B, D, G, K, K1, L HDTV - 480i; 480P; 720P; 1080i
Audio	One 4-Ohm, 2W, internal speaker
	2 Watts amplifier
	Input sensitivity 0.3Vrms

Environmental Features

Item	Description
Temperature	Operating : 10~40°C Storage : -20~60°C
Maximum Humidity	Operating : 10~40°C, 80%RH(Max.), non-condensing\ Storage : -20~60°C, 80%RH (Max.), non-condensing
Acoustic noise level	32 dBA (expect marketing spec.) 35 dBA (Typical, Under 25°C) 37 dBA (Max., Under 25°C)

Environmental Features

Item	Description
Lamp Life	1,500 hours marketing 1,200 hours typical, 50% survival rate

Altitude	Operating : 0~2,500 ft 10°C~40°C
	          2,500~5,000 ft 10°C~35°C
	          5,000~10,000 ft 10°C~25°C

	Storage : 40,000 ft
MTBF	Operating more than 12,000 hours (90% Confidence Level)

Lamp Specification

Operating and Measurement Conditions

Item	Description
Ballast type	Test conditions stable at 150W with OSRAM PT VIP 150 AC/100-240 HI ballast
Rated lamp wattage	150W
Burner position	0º to +20º (0º optical axis horizontal)
Burning position	Horizontal

Temperature

Item	Description
Lamp burner Mo foil, back	< 350ºC
Lamp burner Mo wire	< 400ºC
Lamp burner Mo foil, front	< 350ºC
Burner temperature	900ºC~1000ºC

Note : Validation of max. permissible temperatures by reference thermocouple measurement based on a reference lamp housing.

Typical Burner Characteristics (Initial)

Item	Description
UV-output	UVA (315-400 nm) 9W typical UVB (280-315 nm) < 0,13 W UVC (248-280 nm) < 0,013 W
UV-output through dichroic reflector	(248-400 nm) 2.5W typical
Total visible flux	(400-780 nm) 38W typical
IR	(780-2500 nm) 38W typical

Average Lamp Life and Lumen Maintenance

Item	Description
Switching cycle	3.5 hrs on 0.5 hrs off
Lamp life time	1000 hrs typical
Lamp life	Lamp output > 50% of initial lumen output

Light output

Item	Description
Ballast type	Test conditions on electronic power supply OSRAM PT VIP 150 AC/100-240 HI stable
Stabilization time	5 min, without forced cooling
Luminous flux throughaperture	Typ. : 5400 lm @ 5.0 x 3.8 mm^{2}rect. aperture
Rectangular aperture	Min. : 5000 lm @ 5.0 x 3.8 mm^{2}rect. aperture
Color coordinates	Typ. x : 0.280 +/- 0.020 Typ. y : 0.290 +/- 0.020

Item	Description
Rise Time	Rise time to 80% of the stabilized luminous output is < 90 sec without forced convection. Extensive cooling of the hulb during lamp run-up phase has to be avoided.

Item	Description
Hot Restrike	If the unit has been off for more than 60 sec. the lamp must restrike. (Ignition voltage 20 kV +/- 3 kV) No forced cooling is required following lamp switch-off.

Caution : This lamp emits ultra violet (UV) radiation and operates at high pressure. This lamp may only be used in enclosed fixtures that comply with UL1572. Due to the high within the lamp, P-VIP lamps may only be operated within enclosed, purpose-built housings.

DMD Specification

Table 1.   Physical, Optical and Thermal Parameters

Parameter	Min	Nom	Max	Unit
Physical				
Number of columns		1024		
Number of rows		768		
Mirror pitch (width)		13.68		mm
Total width (active mirror array) [1024 pixels]	---	14.008	---	mm
Total height (active mirror array) [768 pixels]	---	10.506	---	mm
Optical				
Mirror tilt (half angle) (Note 1)	11	12	13	Degrees
Axis of rotation - upper right to lower left	44	45	46	Degrees
Flatness gradient over total mirror array			0.1	%
Active area fill factor (by design)		85.2		%
Mirror metal specular reflectivity (420-700nm)		89.4		%
Window material designation (Type A)		Corning 7056		
Window refractive index @ 545nm (Type A)		1.487		
Window transmittance - including AR coating, measured @ 420-680 nanometers (Note 3)	97			%
Window flatness (@ 550 nanometers) spherical power/irregularity (astigmatism, etc.)			4/12	fringes
Window aperture photopic reflectivity			23	%
Thermal				
Thermal impedance, active area to case (Note 4)			0.6	ºC/W

Note 1 : Tilt Angle Tolerances

Limits on variability of mirror tilt half angle are critical in the design of the accompanying optical system. Variations in tilt angle within a device may result in apparent non-uniformities, such as line pairing and image mottling, acress the projected image. Variations in the average tilt angle between devices may result in colorimetry and system contrast variations. The specified limits represent the tolerances of the tilt angles within a device.

Note 2 : Active Area Reflectivity

The DMD specular reflectivity is defined as the ratio of the light incident upon the mirror array to the light specularly reflected from it. The measurement is made with all mirrors in the full on state without electronic duty cycle effects (i.e. measure using 100% duty cycle). The specified specular reflectivity applies to any arbitrary point on the DMD active area.

Note 3 : Window Transmittance

Angle of incidence 0° - 45° at 42-680nm. Double pass system. Two AR coating surfaces at 0.5% reflectivity per AR coating.

Note 4 : Thermal Performance

The DMD is designed to conduct absorbed and dissipated heat to the back of the package where it can be removed by an appropriate heat sink. The heat sink and cooling system must be capable of maintaining the package within the specified operational temperatures. The total heat load on the DMD is largely driven by the incident light absorbed by the active area although other contributions include light energy absorbed by the window aperture and electrical power dissipation of the array. Optical systems should be designed to minimize the light energy falling outside the window clear aperture since any additional thermal load in this area can significantly degrade the reliability of the device. For more information on thermal characteristics and applications of the 0.7XGA DMD, refer to Texas Instruments DMD Thermal Guide for 0.7XGA Type A.

Table 2. Absolute Max. Ratings

Parameter	Min	Max	Unit
Logic supply voltage, VCC	-0.5	4.5	VDC
Mirror electrode voltage, VCC2	-0.5	8	VDC
Readback reference voltage, EVCC	-0.5	4.5	VDC
Input Voltage, MBRST	-2.8	2.8	V
Input Voltage, other inputs	-0.5	4.5	VDC
Short circuit output current		+/-25	mA
Operating temperature - for array and points 1,2 & 3	0	65	°C
Differential temperature - any two of the reference points 1, 2 & 3		15	°C
Storage temperature	-40	80	°C
Operating relative humidity (none-condensing)	0	95	%
Storage relative humidity (none-condensing)	0	95	%
Mechanical Stud Attach Load		35	pounds-force

DC-DC Specification

Dimensions and Weight

ITEM	Description
DC-DC Converter Size	70 x 42 x 27mm
DC-DC Converter Weight	46g

DC-DC Converter Data

ITEM	Normal	Max.
Input Wattage	32W	50W
Power Dissipation	7W	12W
Output Voltage1	3.3V	
Output Current1	1.5A	2.0A
Output Voltage2	5V	
Output Current2	1.5A	2.5A
Output Voltage3	13V	
Output Current3	1.0A	1.5A

Lamp Driver Specification

Dimensions and Weight

ITEM	Description
Lamp Driver Size	177 x 50 x 31mm
Lamp Driver Weight	250g

Lamp Driver Data

ITEM	Description
Input Voltage, normal	100V-240VAC, 50/60Hz
Input Current, normal	2.1A-0.9A
Input Wattage, normal	210W
Power Dissipation	20W normal, 30W max.
Output Voltage (Lamp)	85V AC rectangular
Output Current (Lamp)	1.8A max. 2.4A
Output Wattage (Lamp)	156W (at R=46.3ohm at 85V)
Ignition Pulse	Typ. 8kVpeak symm. max. 10kV peak symm. Typ. 1.5s max. 4s
Hot Restrike Delay	60s max.
Enable-Dsable-Enable Cycle	15s min.
Switch off Lamp Voltage	135V 130-140V
Cooling Method	Forced air cooling at 1.5m/s minimum
Thermal Protection	T1 switch point 100°C +/-5°C
Electrical Protection	Short cut + output /- output for max. 10s no protection for short to GND

Environmental Requirements for Lamp and Lamp Driver

ITEM	Description
Ambient Temperature	Operating : 10°C to 40°C
	Non-operating : -20°C to 70°C
Humidity	Operating : 5% to 95% relative, non-condensing
	Non-operating : 5% to 95% relative, non-condensing
Altitude	Operating : max. 10,000ft (3,000m) @ 40°C
	Non-operating : max. 40,000ft @ 70°C

Vibration	Operating : random, standalone 0.015g²/Hz
	        5Hz to 1000Hz, all primary axis,
	        30 minutes per orientation

	Non-operating : sine, standalone Q<=5 1G control,
	        5Hz to 500Hz, all three primary axis,
	        5 minutes sweep rate

Shock)	Operating : standalone 50g 11ms half sine pulse, all primary axis, three shocks per orientation

Note : Lamp mounting must ensure the a.m. vibration and shock conditions.

Function Block Diagram

Main Board

DMD Board

Xtal=20MHz
MCLK=125MHz
DCLK=60MHz

Serial EEPROM

Flash ROM

A/D Converter AD9883-165MHz

DVI Receiver Sil141

DVI Port

VESA M1 Input

Image Processor PW166-20RK

Video Port

Video Processor SAA7118

Video Input

IR Receiver

IR Signal

Remote Mouse Processor

Mouse

RGB Data

CONTROL FPGA

SDRAM 64M

Xtal=58MHz

MICRO CONTROLLER

DATAPATH FORMATTER DPF2

Display Image

Control Signal DCLK=60MHz

DC 3.3V, 5V, 12V

MOTOR CONTROLLER

0.7" XGA DDR DMD MIRROR

PROJECTION LENS

Lamp Enable

LampLit

DC 3.3V, 5V, 12V

Thermal Board

DC 3.3V, 5V, 12V

Control Signal

RGB Light Source

Power AC 110V ~ 220V

BALLAST

DC 400V

DC to DC

Control Signal

12V to Lamp Driver

150W LAMP

Light Source

COLOR WHEEL

Interlock Switch

Thermal Sensor*2

Fan*4

Normal=AC 85V Lamp turning on=20KV

Main Board Block Diagram

Pixel Work 166

AMP
LT1399

→ <Analog> D-Sub Output

GRE [0..7]
GGE [0..7]
GBE [0..7]

AD9883
A / D

Analog
Input

GBLKSPL

ASOGOUT

AGCOAST

AGFBK
AUSOUT

GHS
GUS
GPEN
GFBk

EPROM
24LC21A

Multiplexer
74LVC157

Multiplexer
74LVC157

Image
Processor

ACTDATA
DRE [0..7]
DGE [0..7]
DBE [0..7]
DCLKOZ
YSYNCOZ
HSYNCOZ

DMD
BOARD

SDA 1
SCL 1

DHSOUT. DVSOUT. DFPGPEN.
DHSOUT. DFP/VGA#

GRE [0..7]
GGE [0..7]
GBE [0..7]

RESETZ
LAMPLITZ

IR SYNC

Sil141
Digital
Receiver

Vy [0..7]
VUV [0..7]
VCLK
VPEN
VVS
VHS
VFIELD

CLOCK
Generator
ICS 501/502

MCLK
DCLK

RESET
7SEC
STANDBY

RESET
CIRCUIT

IR Receiver

Video
Dicoder
SAA7118

Microprocessor
PW166

IRDATA 1
IRDATA 2

IR-F
IR-R

Video Input

RXD
TXD

PWBT
ERR_OUT
SHUTDW#

RS-232
Transceiver
MAX202

SDA
SCL

THERMAL
BOARD

USB
Controller
cy7c63612

TO PC

IR-R
IR-ONOFF

Audio
Amplifier
LM4832

Audio
Amplifier
LM1877

→ Speaker

VPPEN
A [18:1]
D [0:15]
ROMOEn
ROMWEn
BOOTWE

Keypad
Control
SYNC

USB_D+
USB_D-

Audio Input

PW_LED
LED 1
LED 2

FLASH ROM
TE28F800

KEYPAD

TO PC

TO PC

DMD Board Block Diagram

CUSTOMER FRONT END

- RV(7:0), GY(7:0), BU(7:0)
- VSYNCZ
- HSYNCZ
- ACTDATA
- OLACT
- SYNCVAL
- IIC BUS
- LAMP CONTROL & STATUS
- UNIV. SERIAL BUS
- COLOR WHEEL INDEX
- PIXEL CLOCK

DATAPATH FORMATTER DDP1000

CONFIG/SEQUENCE MICRO. CODE FLASH

DATA (16)

ADDRESS(18)

+ 5V   + 12V

VCC2, VOFFSET, VBIAS, VRESET GENERATION

VOFFSET/VCC2

VBIAS

VRESET

RESET ASIC

MBIASRST(16)

CONTROL

SR16 CONTROL

DMD CONTROL

DMD DATA (63:0)

DMDCLLK

0.7" DDR DMD 1024*768

MRSTZ

MOTOR CONTROL

ALLERGO MOTOR CONTROLLER

MOTOR STATUS

MOTOR DRIVE

CLOCK OSC. OR CRYSTAL

RAMBUS™ CLOCK GEN

Short Channel

RDRAM

Thermal Board Block Diagram

THERMAL BOARD Interface

```
                                                              +12V*1
                                                              +5V*2
                                      ┌──────┐                +3.3V*2
 ┌──────────┐      ┌───────────────── │ 30P  │ ──────────────→
 │ PHOTO    │───→  │ 3P Connector     │ Conn-│                GND
 │ SENSOR   │      │                  │ ector│ ──────────────→
 └──────────┘      │ 3P Connector*4   │ to   │ ←──── LAMPEN (RESETZ)
 ┌──────────┐      │                  │ Form-│        CWINDEX
 │ FAN1-4   │←───  │ 2P Connector     │ atter│ ──────────────→
 └──────────┘      │                  │ Board│        LAMPLIT
 ┌──────────┐      │ 4P Connector*2   │      │ ──────────────→
 │ THERMAL  │───→  │                  └──────┘  Power on/off (only 5V, 15V)
 │ SWITCH   │      │ 3P Connector             ←──────
 └──────────┘      │                  ┌──────┐
 ┌──────────┐      │ 14P Connector    │      │←──── ┌──────────┐
 │ THERMAL  │───→  │                  └──────┘      │ IR       │
 │ SENSOR   │      │                               │ SENSOR   │
 └──────────┘      └──────────────────┘            └──────────┘
```

+15VSBY
+5VSBY
+3.3VSBY

LAMPEN_OUT
LAMPLIT_IN

DC TO DC POWER SUPPLY

Optics

Conceptual Drawing

Item	Name	Description
1	150W P-VIP Lamp	The light source
2	Color Wheel	Separating the light beam into and produce R.G.B colors
3	Hollow Rod	Making the light beam uniform
4	Condenser Lens	Condensing the light beam
5	Mirror 2	Folding optical path
6	Mirror 1	Folding optical path
7	Relay Lens	
8	DMD Module	Displaying component

Firmware Upgrade

This chapter provides the equipment needed, setup and upgrading procedure for Firmware upgrade.

Equipment Needed

Item	Description
Software	Bootcode.axe
	Bootcode.hex
	Configdata.hex
	Gui.hex
	RomCode.axe
	Flasher.hex
	pwSDK.inf
	ChkSum.txt
	Flasher.hex
	DISPSUM.exe
	FlashUpgrader MFC Application
Hardware	Fixture
	PC
	PD520 Projector

Setup Procedure

1. Connecto RS232 to mini din 3Pin cable to COM1 of PC and PD520.

Setup Procedure

1. Connecto RS232 to mini din 3Pin cable to COM1 of PC and PD520.

Upgrading Procedure

1. Execute "FlashUpgrader MFC Application".
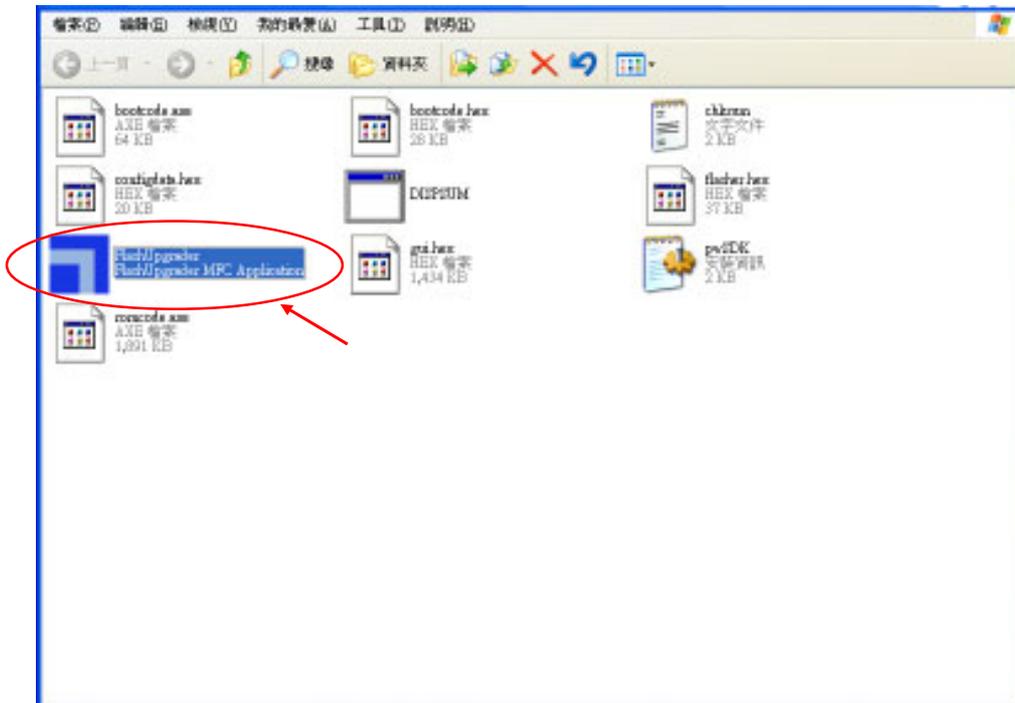
2. Click "Choose" button.
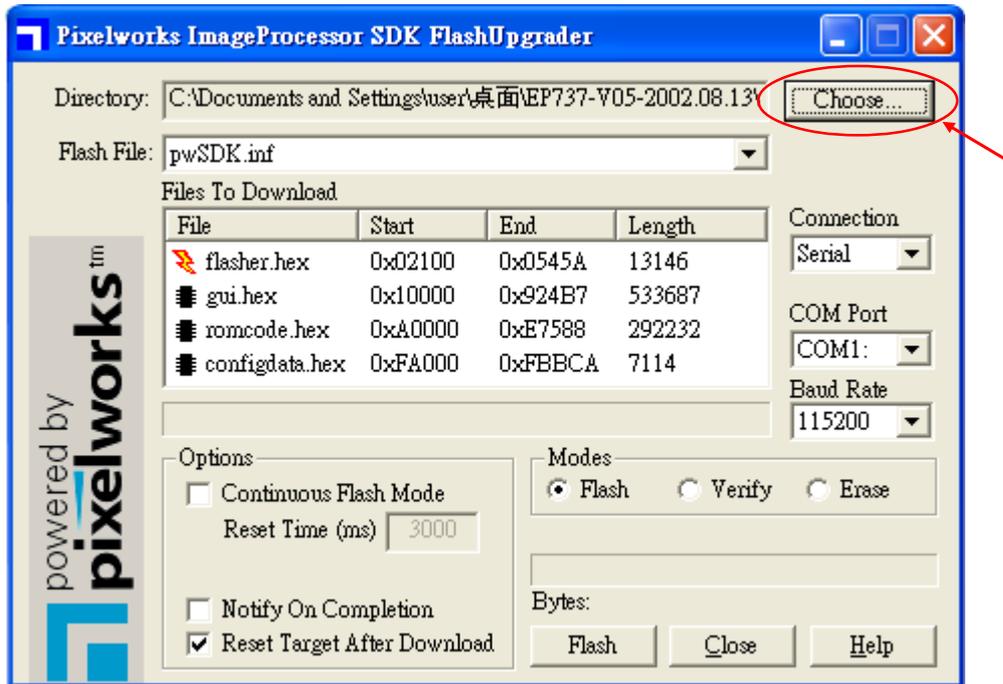
3. Search <pwSDK.inf> file from EP737 F/W folder, then click "Open" button.
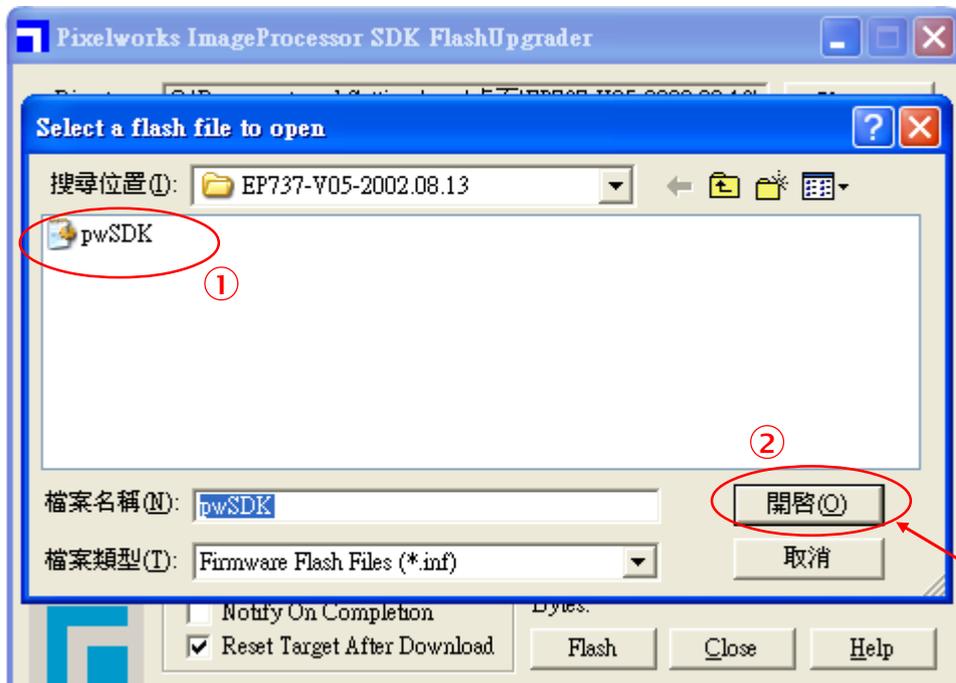
4. Select "Serial" Port.
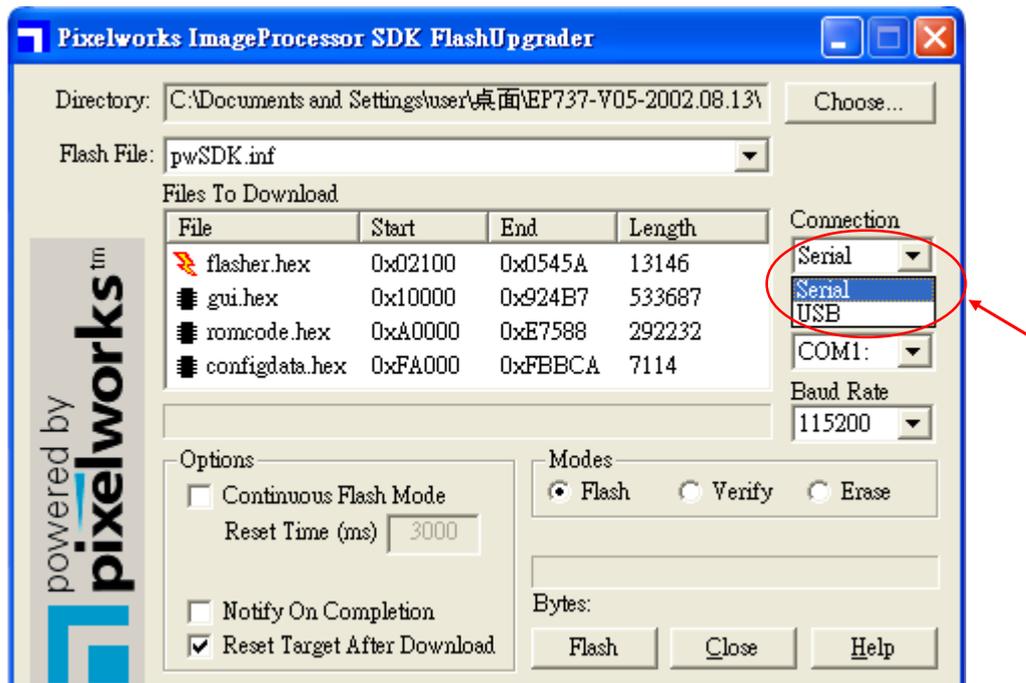
5. Select "COM1" Port.
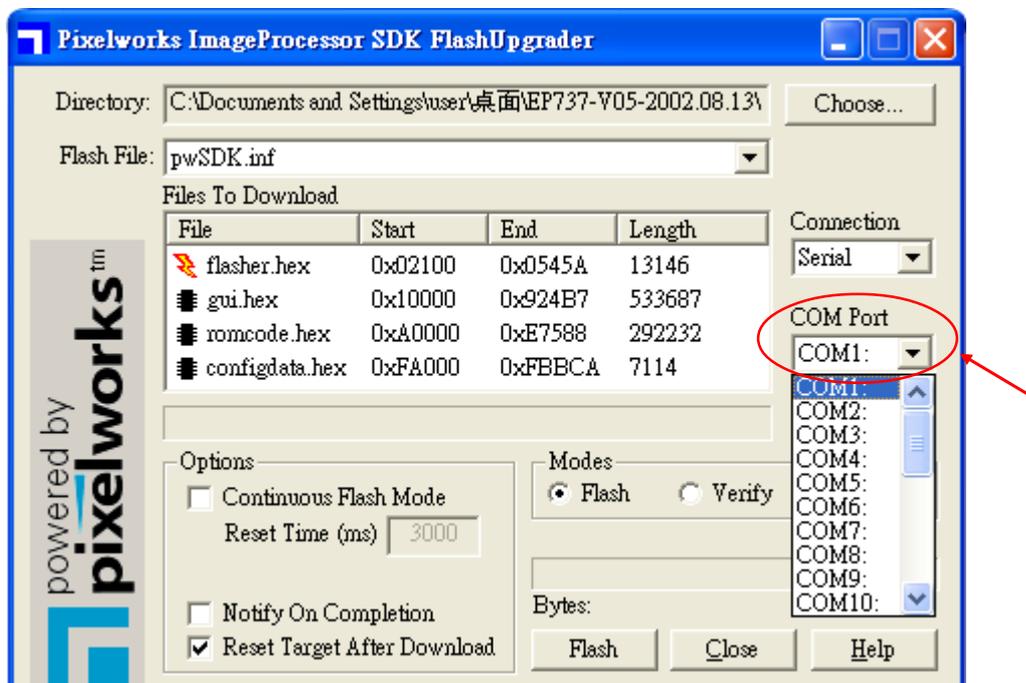
6.   Select Baud Rate to be "115200", then click "Flash" button.
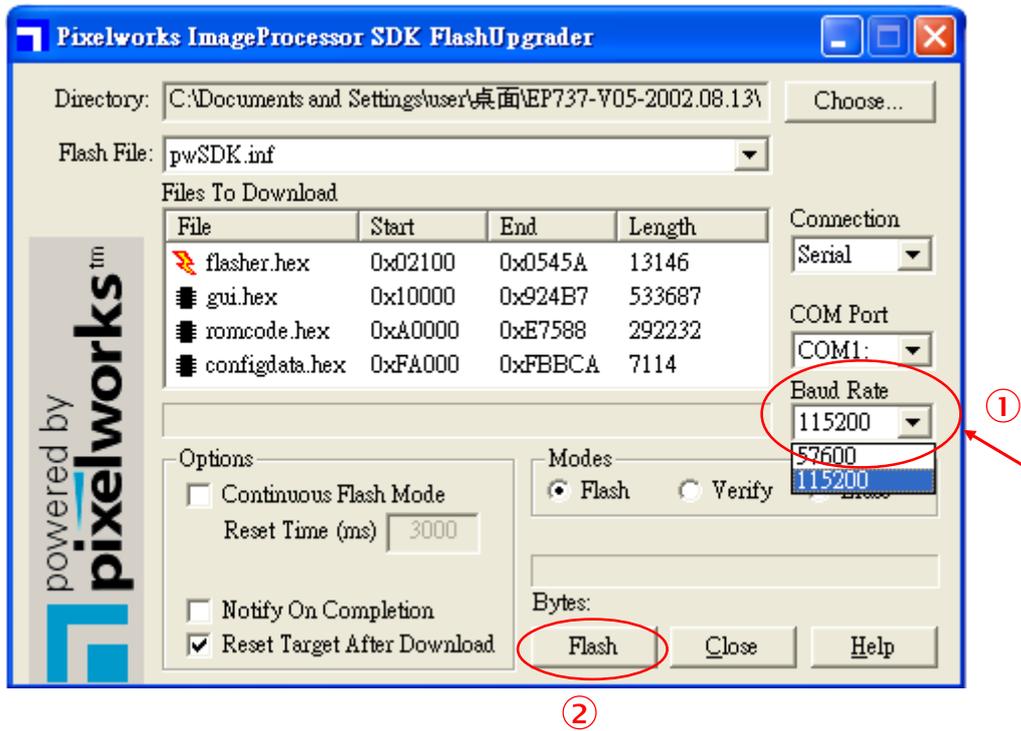
7.   Plug in the Power Cord to EP737, then press and hold on "Standby" key on EP737 keypad.

Note : The Firmware upgrade program will be stop if you havn't hold the standby button.
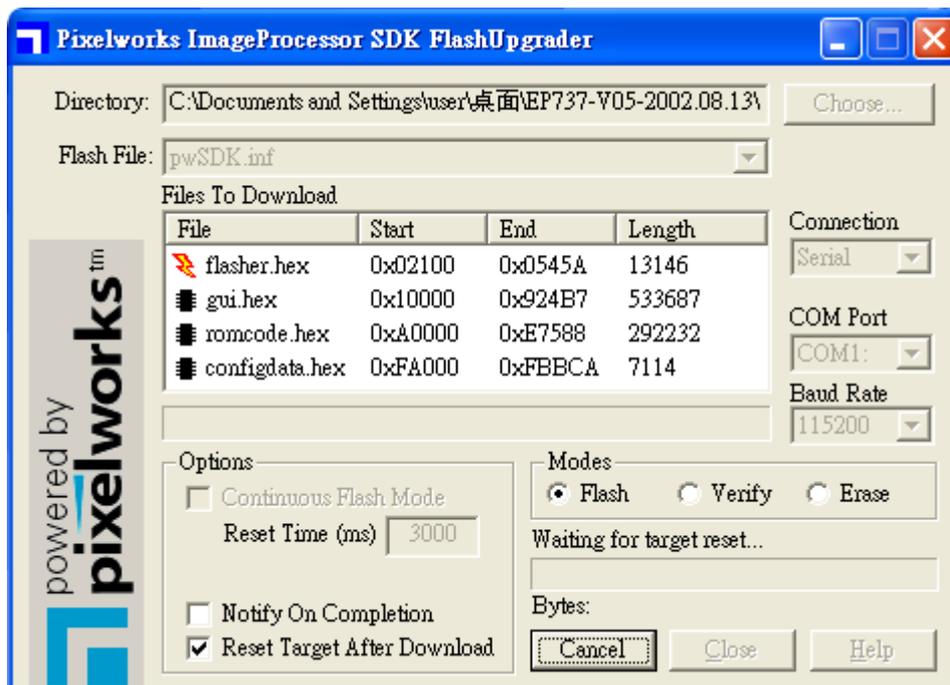
8. Downloading <Flasher.hex> and <Gui.hex> files.
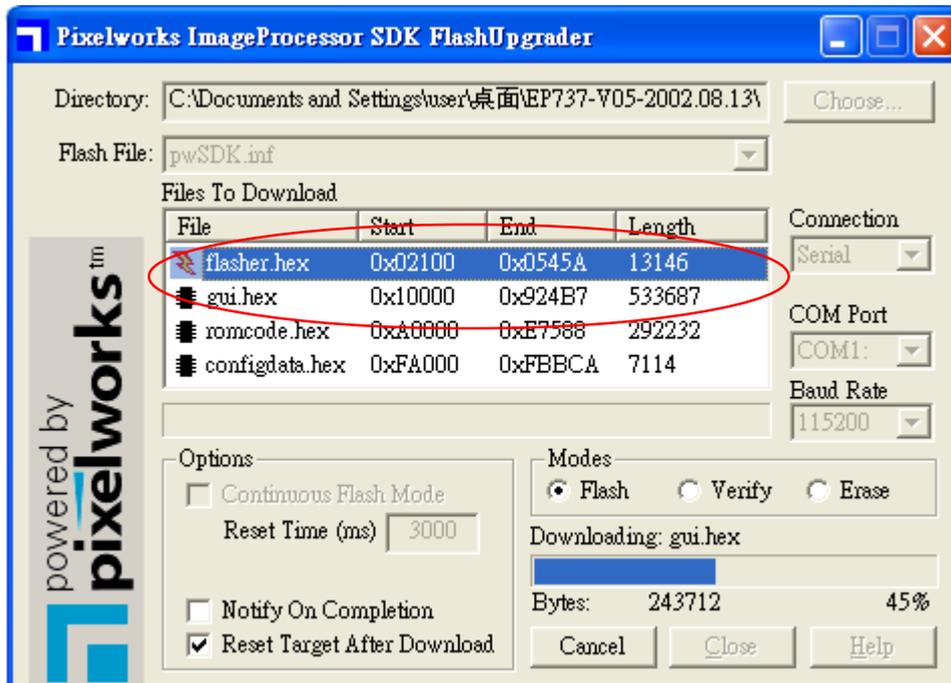
9. Keep on downloading <RomCode.hex> file.
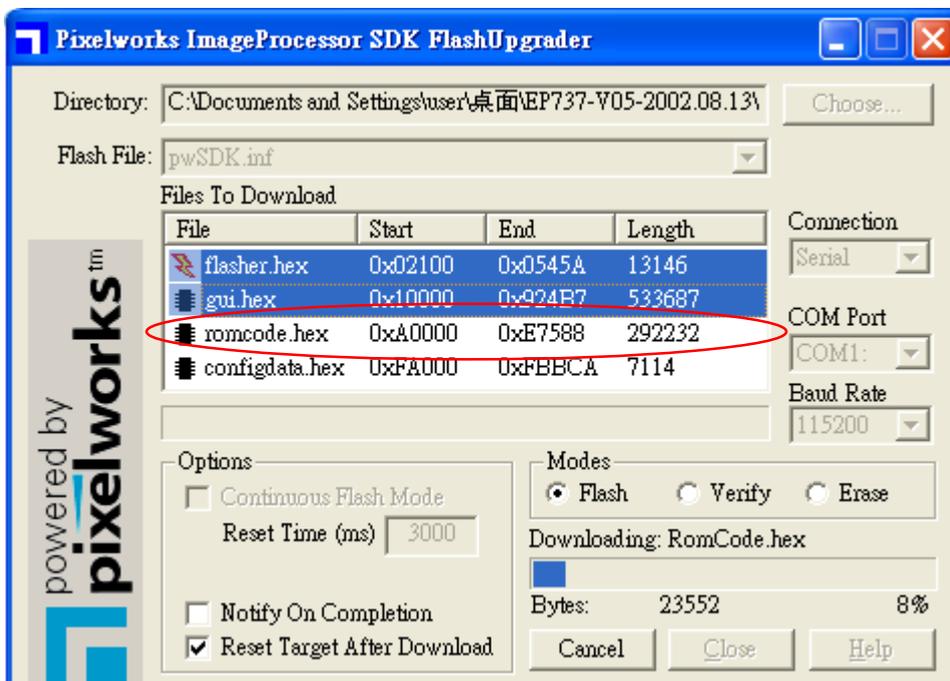
10. After <Configdata.hex> file is downloaded, await starting up EP737 (about 2-3 seconds), then finish the upgrading procedure
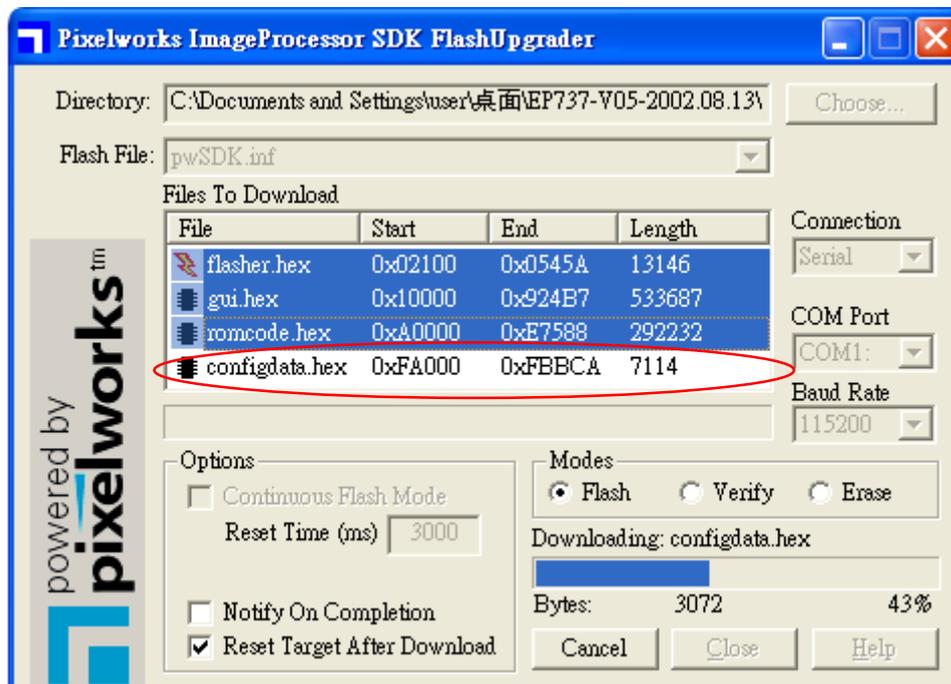
Machine Disassembly and Replacement

This section provides disassembly procedures for PD520 Micro Portable XGA DLP Projector. Before you begin any of these procedures, be sure to turn off the power, computer system, and other attached devices; then disconnect the power cable from the electronically outlet. Moreover, when you disassemble the projector, be sure to put the screws in a safe place and separate them according to grouping.

Tool Needed

Item	PHOTO
Long Nose Nipper	
Hex Sleeves 5mm	
Screw Bit (+) : 107 Screw Bit (+) : 101 Screw Bit (+) : 102	

General Information
Before You Begin

Before proceeding with the disassembly procedure, make sure that you do the following:

1. Turn off the power to the system and all peripherals.
2. Unplug the AC adapter and all power and signal cables from the system.
3. Anti-static wrist strap.

Disassemble Lamp Module

1. Loosen two screws of Lamp Bottom Cover to remove Lamp Bottom Cover.
2. Loosen two screws of Lamp Module to pull out Lamp Module.
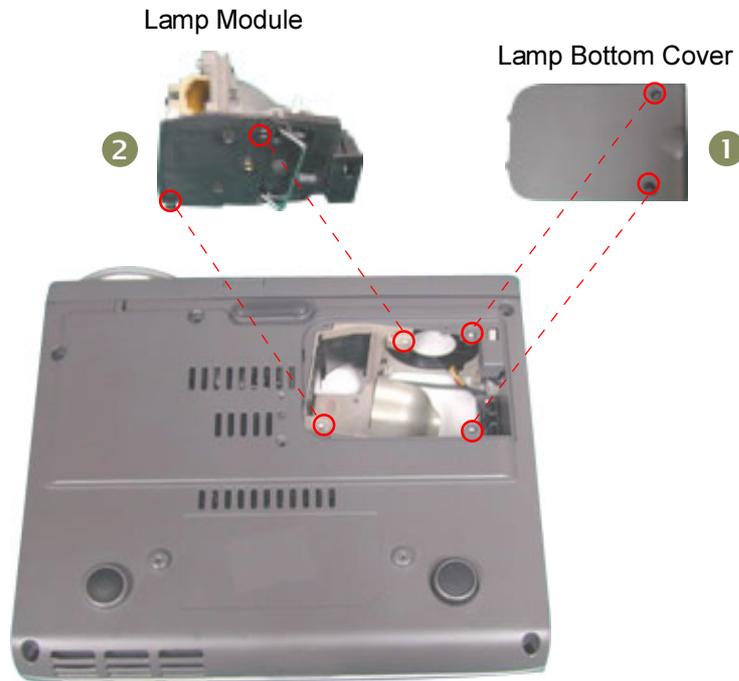
Disassemble Top Cover and Keypad Board

1. Remove five screws of Bottom Cover.
2. Remove one screw beside Right Cover.
3. Remove one screw beside Left Cover.
4. Turn over the projector, then life up Top Cover from Left and Right side.
5. Unplug FFC from Main Board to remove Top Cover.

Bottom Cover

Right Cover

Left Cover
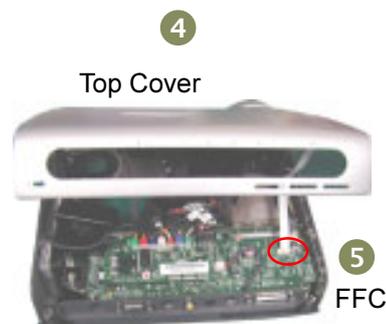
Top Cover

FFC

6. Unscrew four screws to remove Keypad Board and Keypad
7. Unplug FFC from Keypad Board.
8. Separate Keypad Board, Keypad and LED Lens.
9. Unscrew two screws to remove Light Cut Up.

FFC

Keypad Board

Light Cut Up

Top Cover

Keypad

LED Lens

Keypad Board
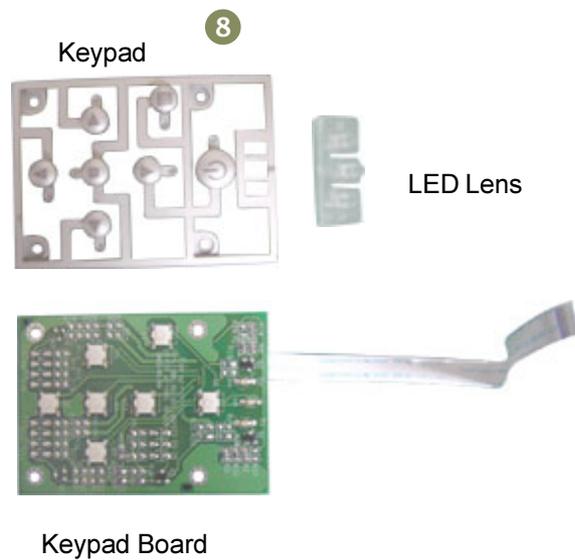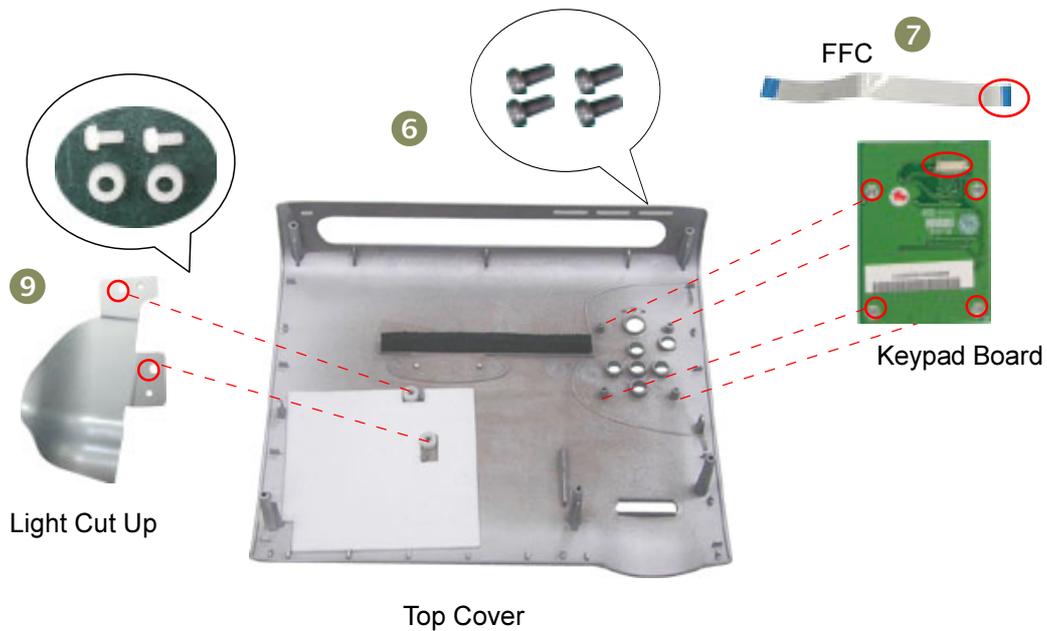
Disassemble Left Cover, Right Cover and I/O Bezel Module

1. Remove four hex screws to remove I/O Bezel Module.
2. Unscrew one screw to remove Left Cover.

I/O Bezel Module

Left Cover
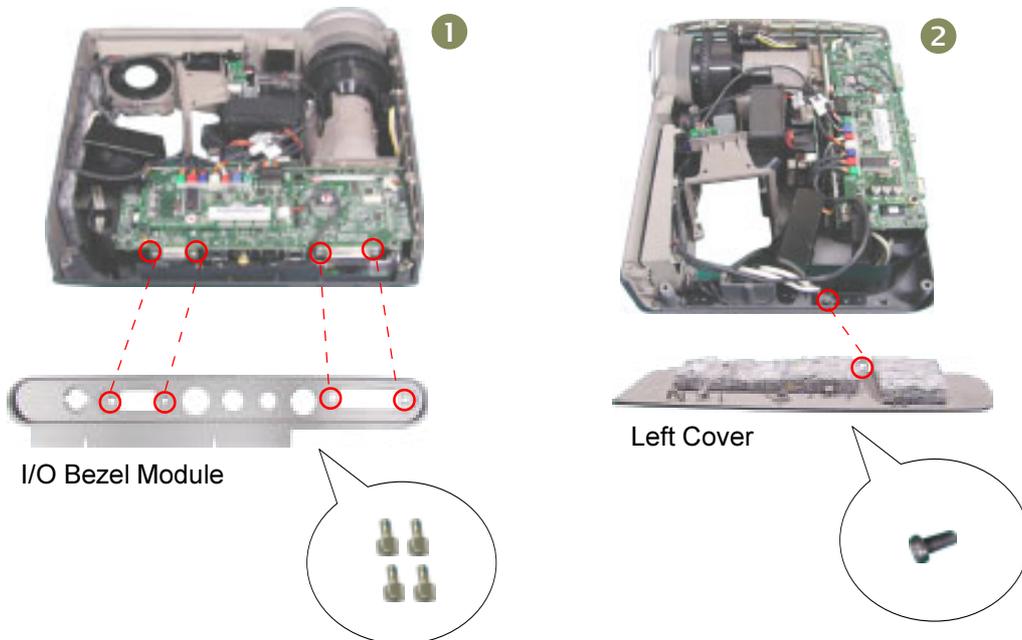
3. Unplug one wire from Main Board and unscrew one screw to remove Right Cover.
4. Remove two screws to take off speaker from Right Cover.

Right Cover

Right Cover

Speaker
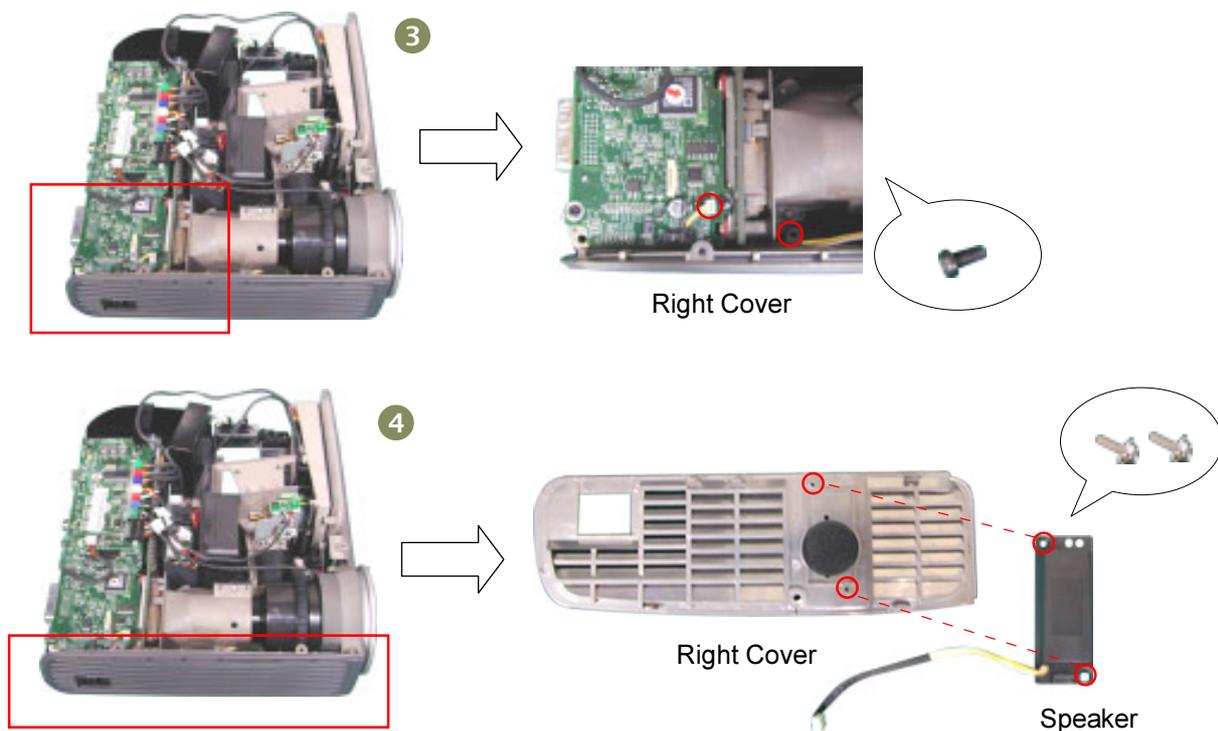
Disassemble Front Cover

1. Pull out Focus Ring from Front Cover Module.

Front Cover Module

Focus Ring

2. Unscrew three screws from Front Cover Module and unplug three wires from Thermal Board. Take off Front Cover Module from Bottom Cover Module.
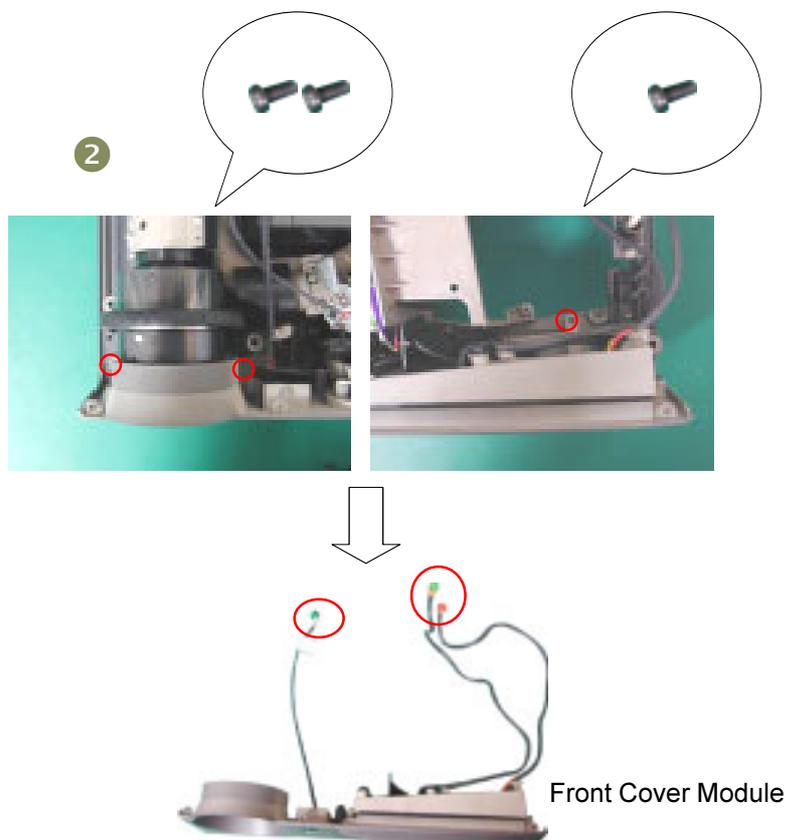
Front Cover Module

3. Unscrew four screws from Front Cover and take off it.

Front Cover Module

③

Front Fan Module
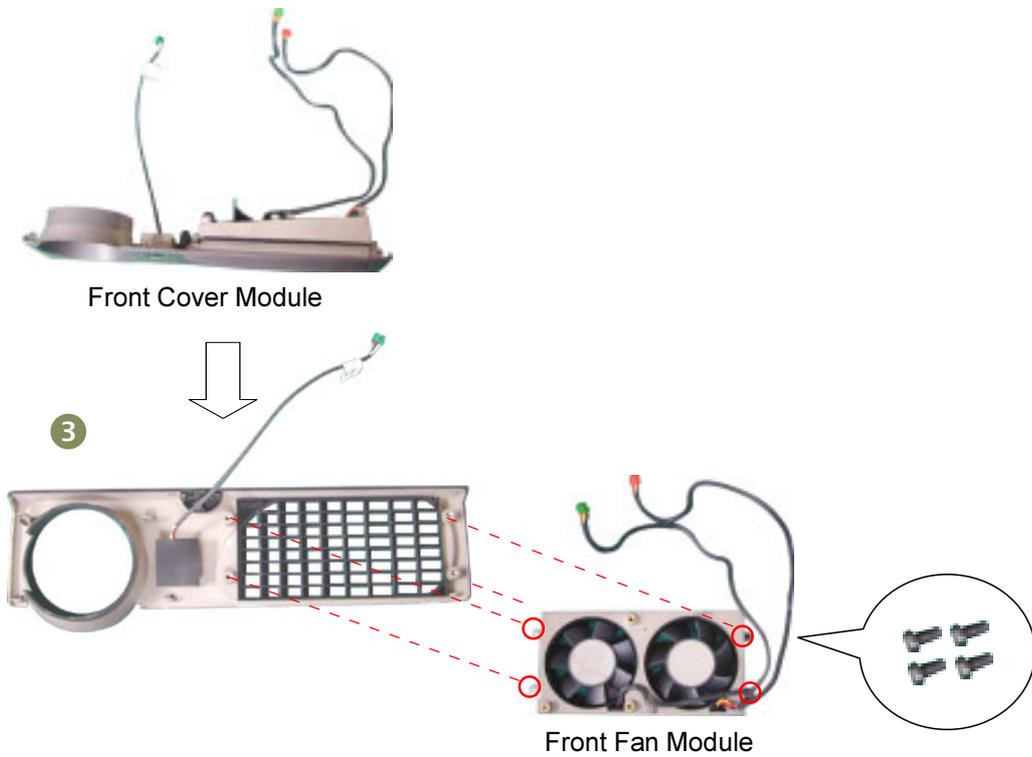
4. Unscrew three screws from Fan Guide to remove it.
5. Tear off IC Cover Pad, pull up IR Sensor Board from Front Cover Module.

④

⑤

Fan Guide

IC Cover Pad

IR Sensor Board
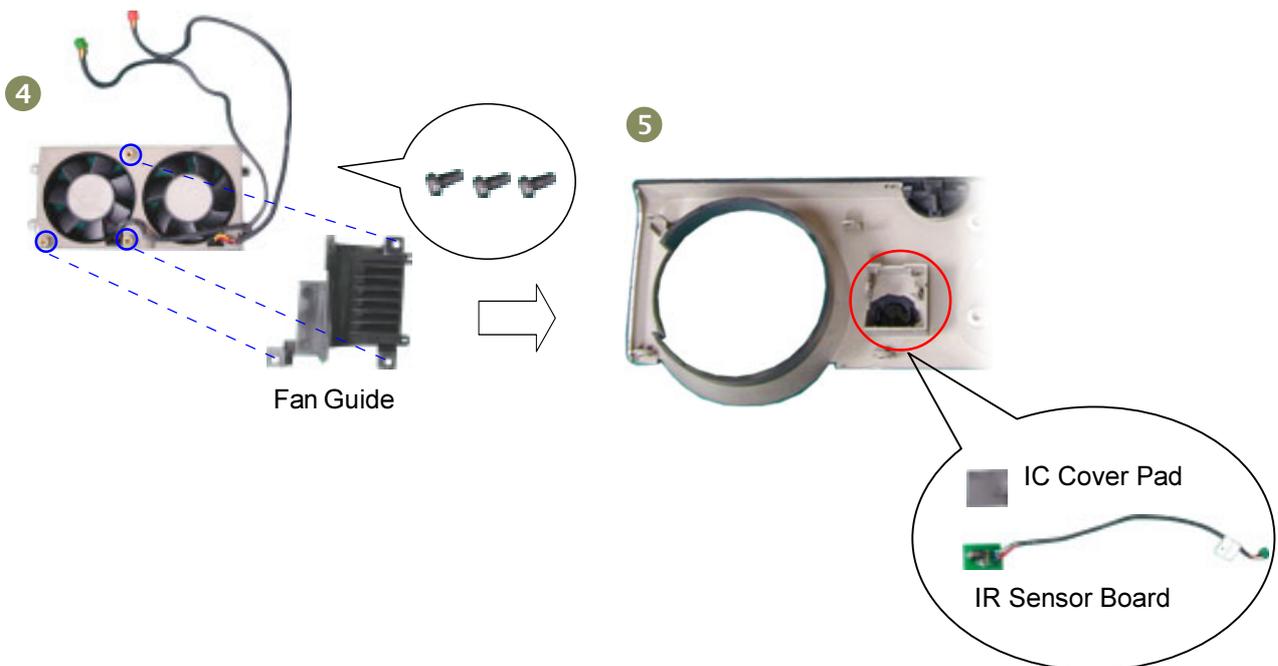
Disassemble Thermal Board and Main Board

1. Unscrew two screws to remove Fan Guide Bracket.

Fan Guide Bracket
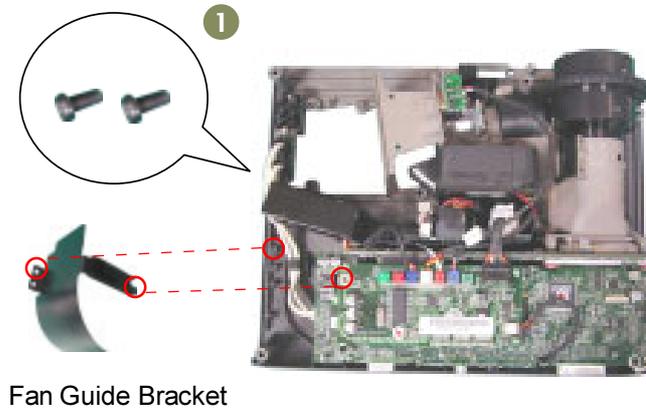
2. Unscrew one screw and unplug five wires from Thermal Board to remove it.

Thermal Board
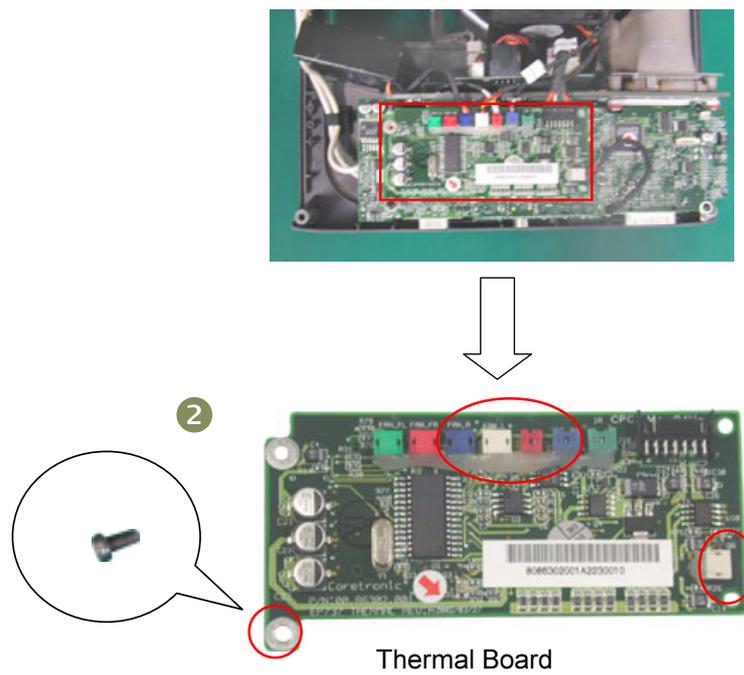
3. Unscrew two hex screws and two screws from Main Board.
4. Pull up Main Board and Separate Main Board and Main Board Bottom Rubber.

Main Board

Main Board Bottom Rubber
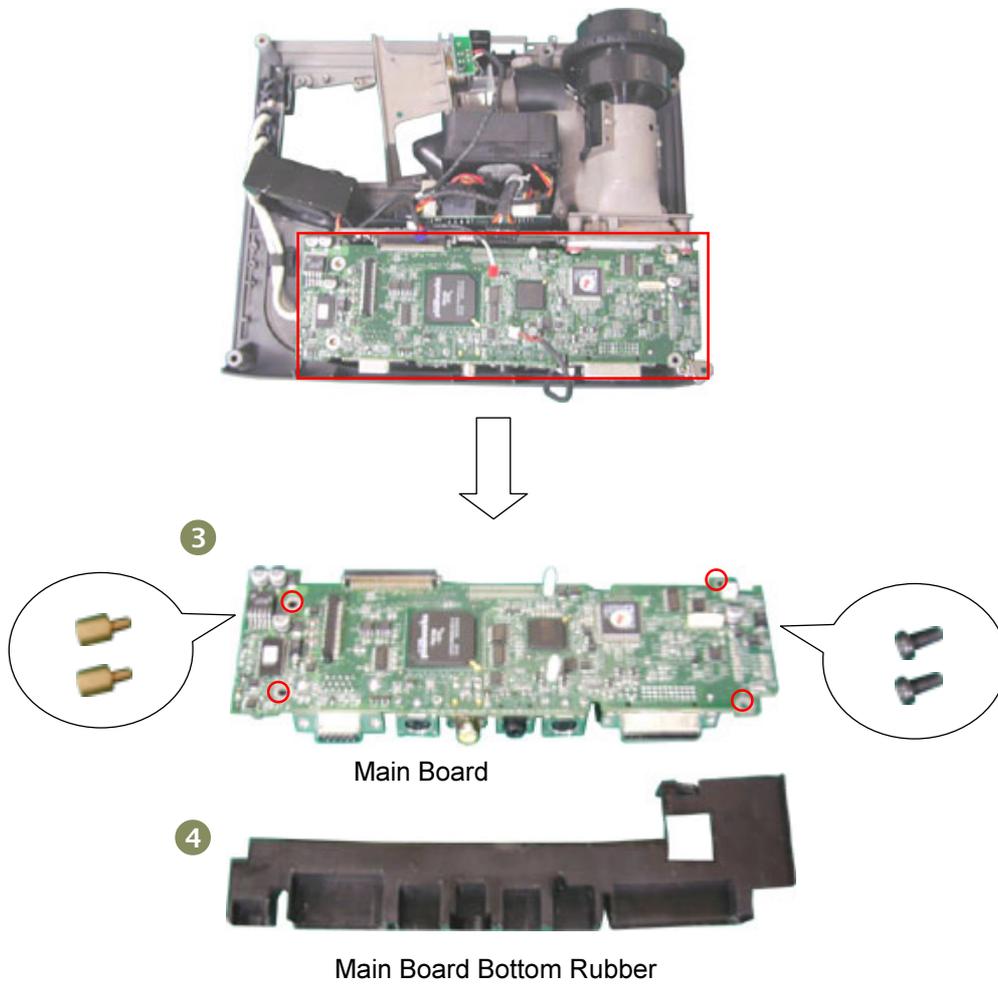
Disassemble Ballast and Fan Module

1. Unscrew two screws from Engine Module and pull out the Ignite Wire.
2. Unscrew two long hex screws and one plastic screw from Ballast Module.
3. Unscrew one screw from grounding then pull put the Ballast Module.

Ignite Wire

Ballast
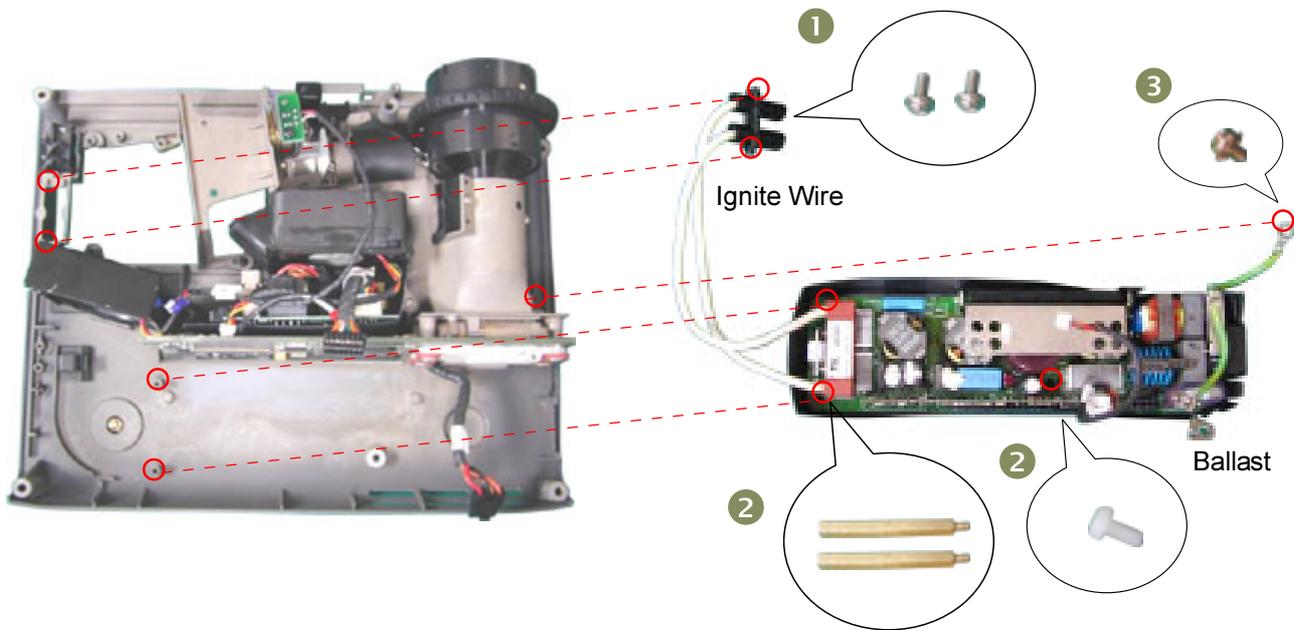
4. Unscrew four screws to remove two Fan Module from Bottom Module.

Fan Module

Bottom Module

Fan Module
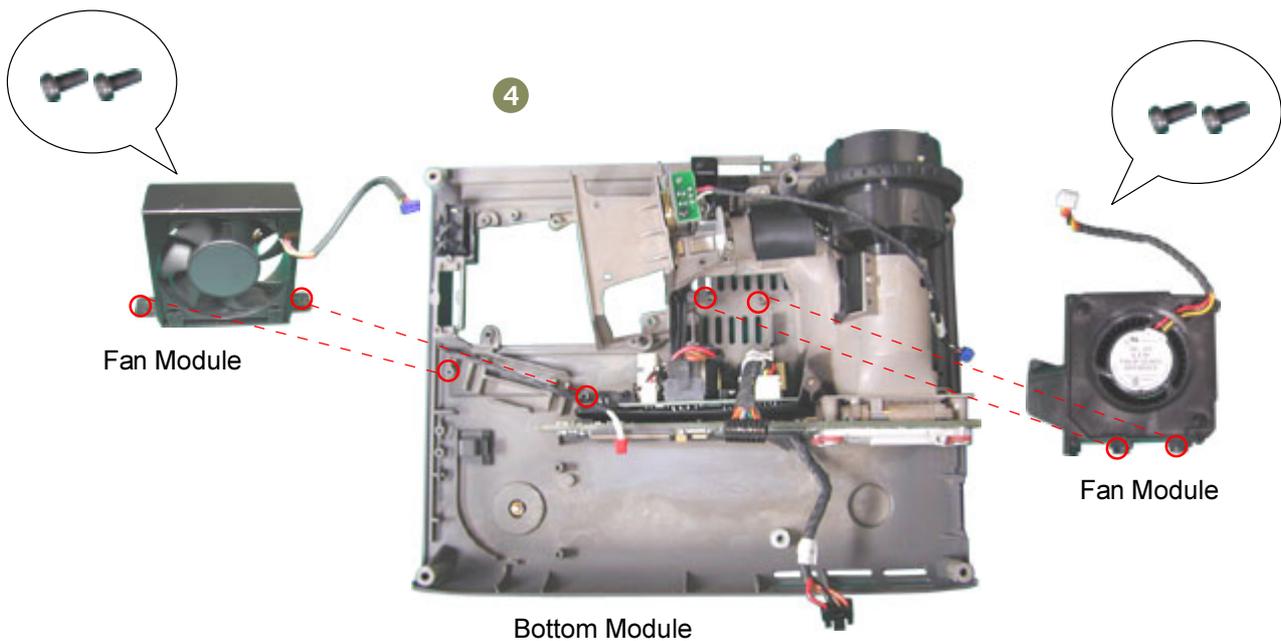
Disassemble DC-DC Board and Interlock Switch

1. Unplug one wire from DC-DC Board.
   Unscrew one screw to remove DC-DC Module from Bottom Cover.
2. Unscrew one screw to remove Interlock Switch from Bottom Cover.

Interlock Switch

Bottom Cover

DC-DC Board
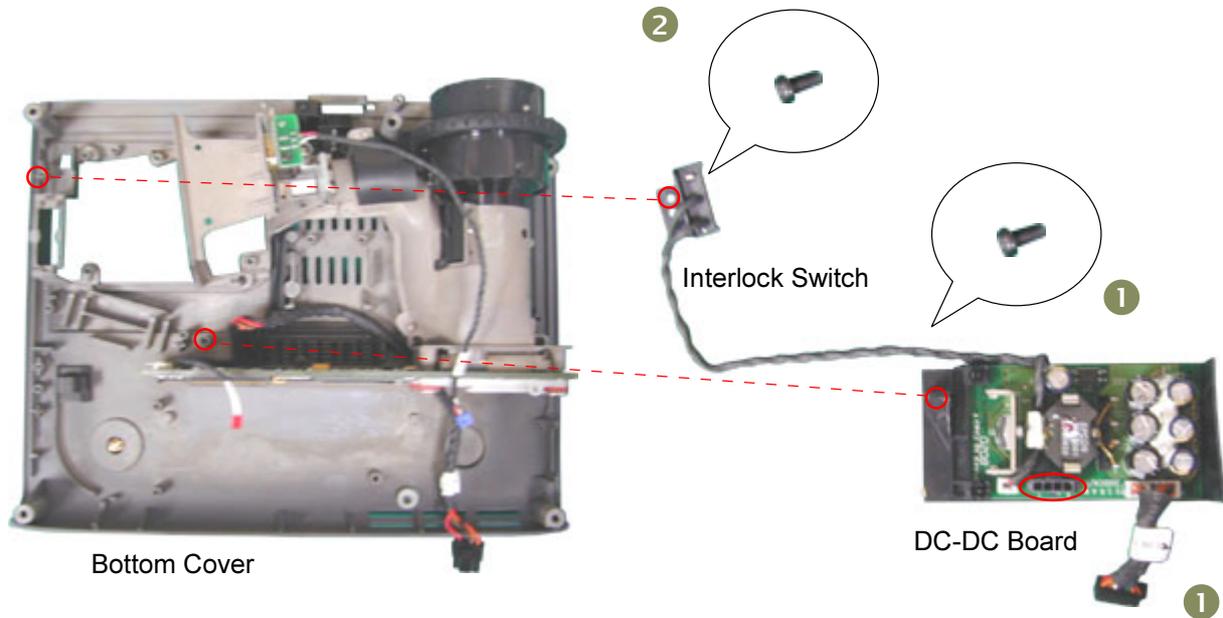
Disassemble Engine, DMD and DMD Board

1. Unscrew four screws to remove Engine Module

Engine Module
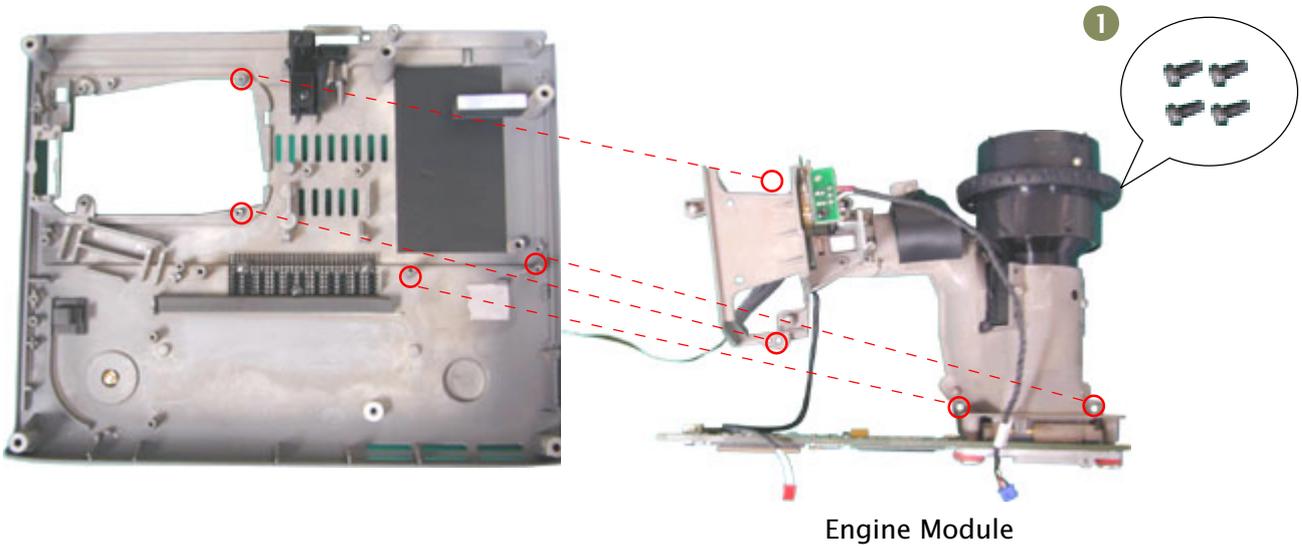
2. Unscrew four shoulder screws and Rubber Washers to remove DMD Heatsink, DMD Board, and Contact Housing Intercon.
3. Remove DMD from DMD Holder.

Engine

DMD Holder

DMD Light-Mask

DMD

Contact Housing Intercon

Rubber Washer

Shoulder Screw

DMD Board

DMD Heatsink
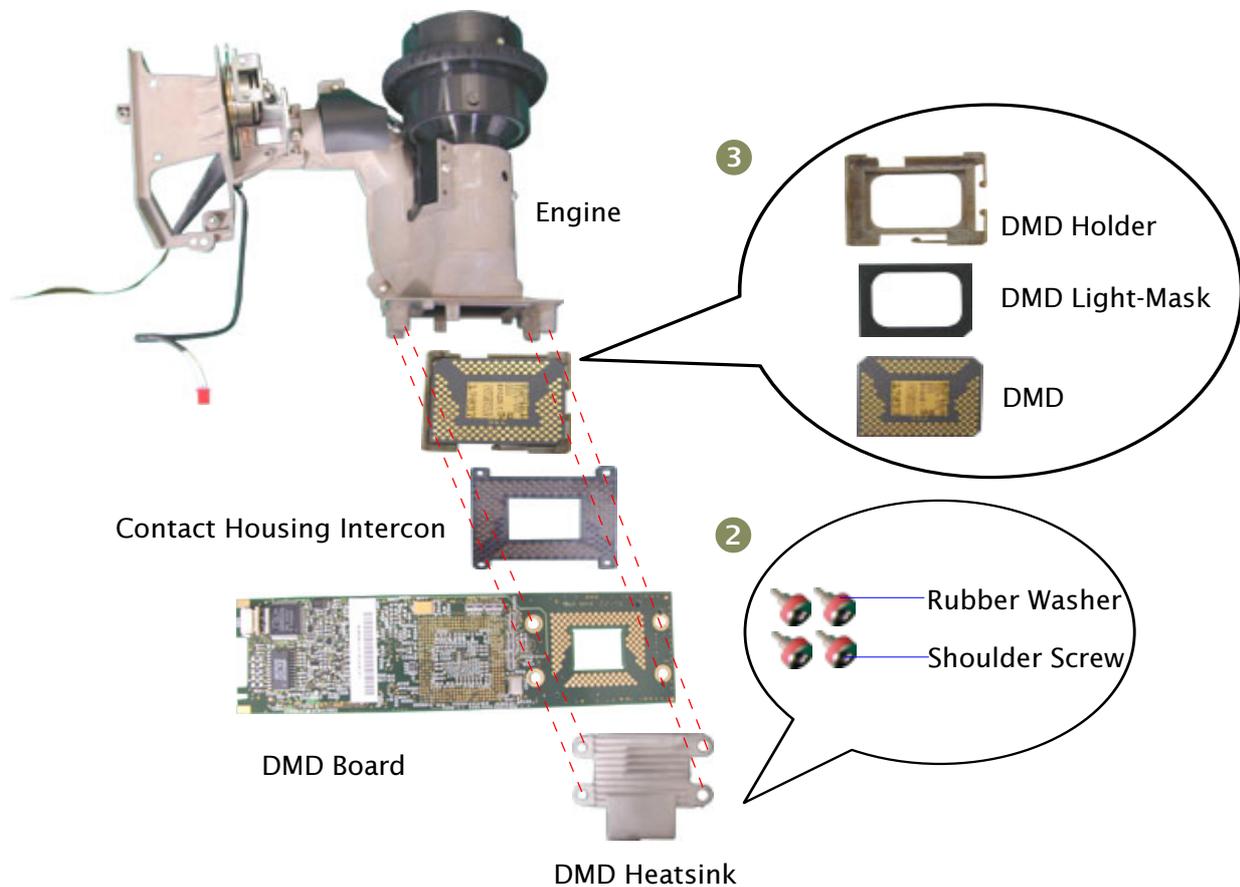
Disassemble Color Wheel, Photo Sensor Board and Thermal Switch

1.   Unscrew one screw to remove Color Wheel and Photo Sensor Board from Engine.

2.   Unscrew one screw to remove Photo Sensor Board from Color Wheel Holder.

3.   Unscrew one screw to remove Thermal Switch from Engine.
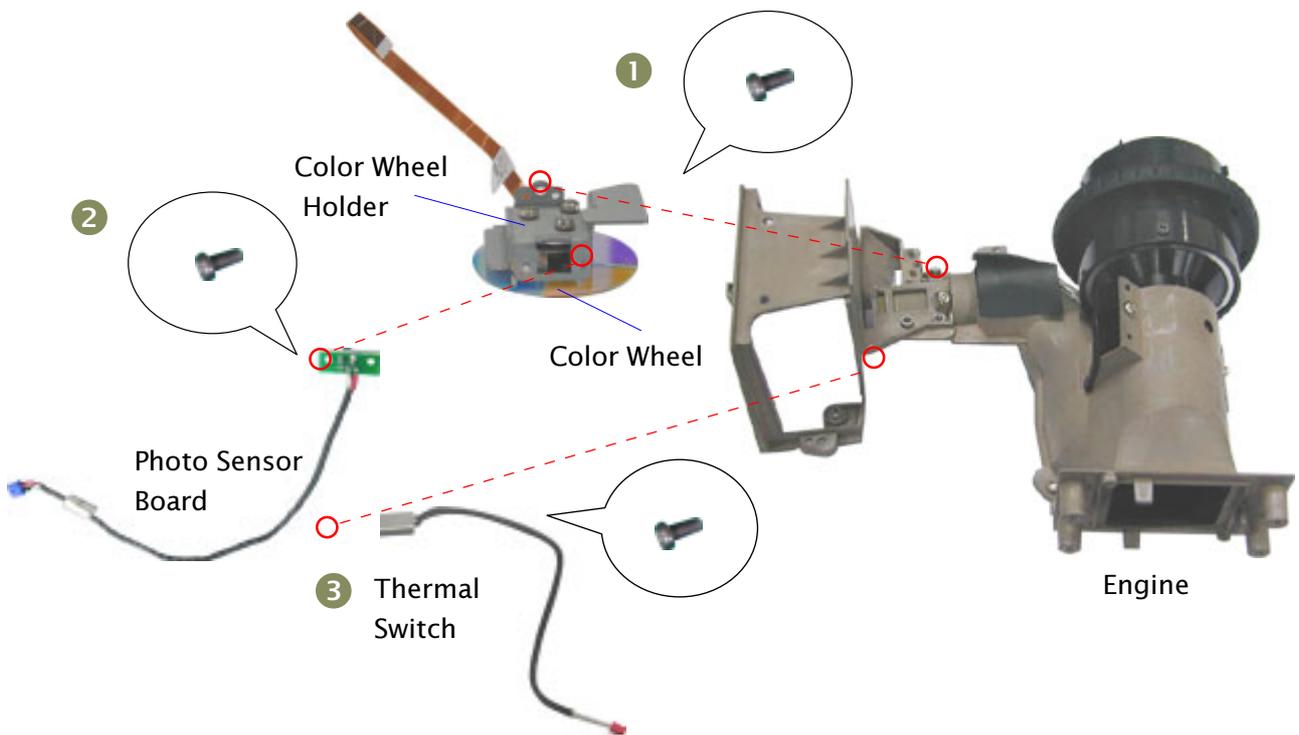
Disassemble Elevator Module

1. Unscrew two screws to remove Elevator Bracket and Elevator Foot Spring from Bottom Cover.
2. Pull out Elevator Hook Noyal rightward. Then remove Elevator Hook Noyal, Elevator Push Spring and Elevator Foot Noyal.

Elevator Bracket

Elevator Foot Spring

Bottom Cover

Elevator Hook Noyal

Elevator Push Spring

Elevator Foot Noyal
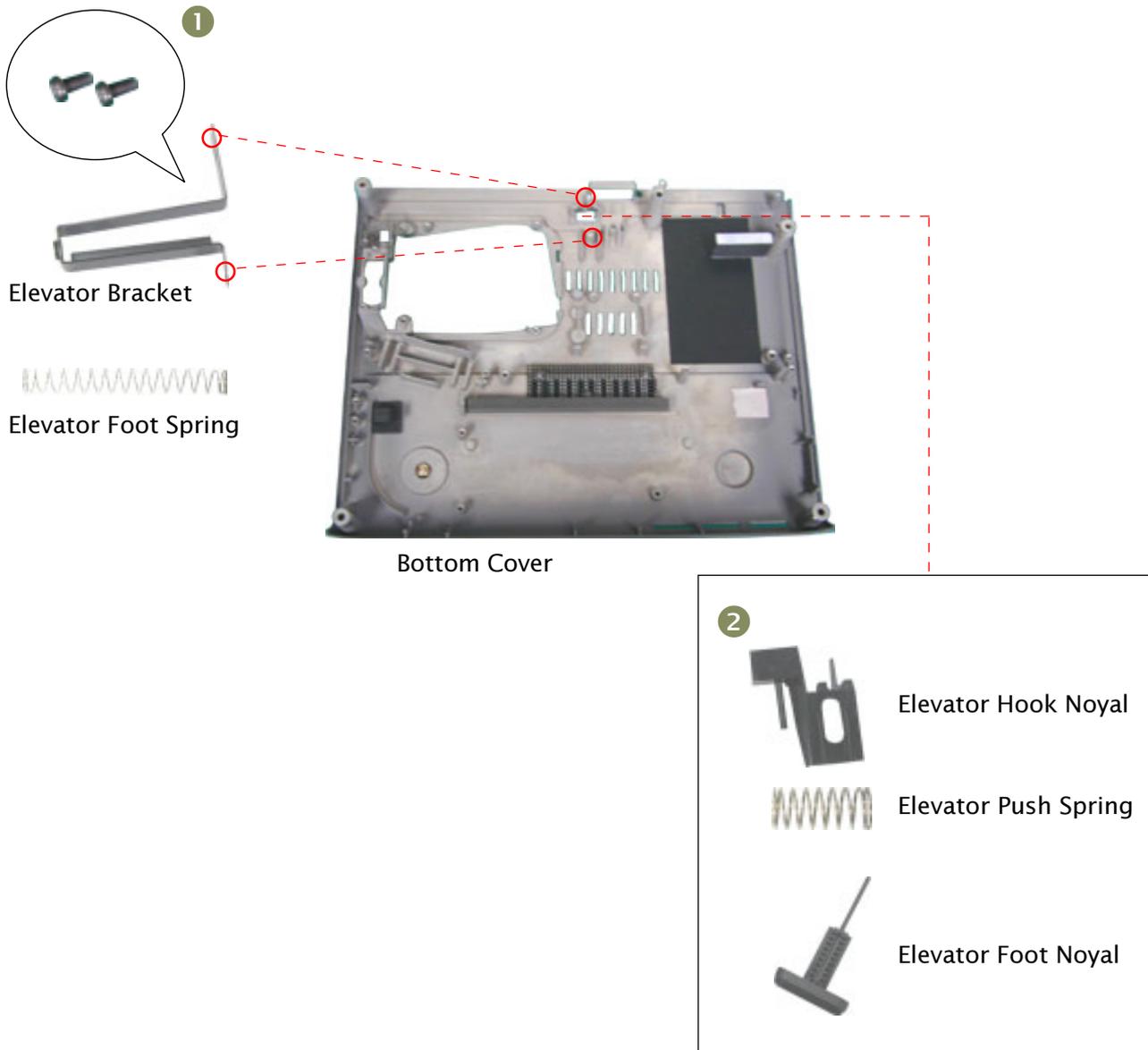
Troubleshooting

This chapter provides technicians and people who have an electronic background a primary description about maintaining the product. Moreover, you can get the appropriate operation to solve some complicated problems of component repairing and professional problems.

The Troubleshooing section focus on below items:

1. Power Troubleshooing
2. Performance Troubleshooting
3. Function Troubleshooting
4. Audio Troubleshooting
5. Remote Control Troubleshooting

Equipment Needed

Item
PD520 Projector
VESA M1 to VGA Cable
PC (Personal Computer)
Audio Input, Video Input
Screw Drivers

Main Procedure

```
                        ┌──────────────┐
                        │    Start     │
                        └──────┬───────┘
                               │
                               ▼
            ┌──────────────────────────────────┐
            │ Connect Power cord, analog        │
            │ or digital signal and audio       │
            │ signal, then turn power on         │
            └──────────────────┬───────────────┘
                               │
                               ▼
                                         No
            ⟨ Is Lamp light on ? ⟩ ──────────────▶  A. Power
                               │                       Troubleshooting
                               │ Yes
                               ▼
                                         No
            ⟨ Is Image OK ? ⟩ ──────────────────▶  B. Image Performance
                               │                       Troubleshooting
                               │ Yes
                               ▼
                                         No
            ⟨ Is function OK? ⟩ ────────────────▶  C. Function
                               │                       Troubleshooting
                               │ Yes
                               ▼
                                         No
            ⟨ Is Audio OK? ⟩ ──────────────────▶  D. Audio
                               │                       Troubleshooting
                               │ Yes
                               ▼
                                         No
            ⟨ Is Remote Control OK? ⟩ ─────────▶  E. Remote Control
                               │                       Troubleshooting
                               │ Yes
                               ▼
            ┌──────────────────────────────────┐
            │         No Fault Found            │
            └──────────────────┬───────────────┘
                               │
                               ▼
                        ┌──────────────┐
                        │     End      │
                        └──────────────┘
```

Power Troubleshooting

```
Start
  │
  ▼
Is LED          No     Check power        Yes    Lamp Replace-      No     Reassembly
indicator OK? ──────▶  cord & input    ──────▶   ment Cover      ──────▶  lamp Replace-
  │                    power voltage            assembly OK?              ment Cover
  │ Yes                  │ No                      │ Yes
  │                      ▼                         ▼
  │                   Supply AC            Change      No    Change     No    Change
  │                   Power                Ballast  ─────▶  DC-DC   ─────▶  Main BD
  ▼
Is Fan          No     Change          No    Change          No    Change
working?      ──────▶  DC-DC        ──────▶  Thermal BD   ──────▶  Fan Module
  │ Yes
  ▼
Is Lamp lit?    No     Can hear        No    Change   No   Change  No   Change   No   Change
              ──────▶  the sound    ──────▶  Ballast ───▶  Main  ───▶  Thermal ───▶  DC-DC
  │ Yes                of lamp                             BD         BD
  │                    ignition
  ▼                      │ Yes
End                      ▼
                      Reassembly       No    Replace
                      Lamp Module   ──────▶  Lamp Module
```

Performance Troubleshooting

```
        ╭─────────╮
        │  Start  │
        ╰────┬────╯
             │
             ▼
      ╱ Have image? ╲──No──▶╱ Change ╲──No──▶╱ Change     ╲──No──▶╱ Change     ╲
      ╲             ╱       ╲ M/B    ╱       ╲ DMD Board  ╱       ╲ DMD CHIP   ╱
             │Yes
             ▼
      ╱ Have garbage ╲──Yes──▶╱ Change ╲──No──▶╱ Change     ╲
      ╲ pattern?     ╱        ╲ M/B    ╱       ╲ DMD Board  ╱
             │No
             ▼
      ╱ Uniformity OK? ╲──No──▶╱ Change          ╲
      ╲                ╱       ╲ Engine Module   ╱
             │Yes
             ▼
      ╱ Is color OK? ╲──No──▶╱ Color Adjust ╲──No──▶╱ Change ╲──No──▶╱ Change ╲──No──▶╱ Change     ╲
      ╲              ╱       ╱ Procedure    ╱       ╲ Photo  ╱       ╲ M/B    ╱       ╲ DMD        ╱
                            ╱ * Note 1     ╱        ╲ Sensor ╱                       ╲ Board      ╱
             │Yes
             ▼
      ╱ Dot defect    ╲──Yes──▶╱ Change     ╲
      ╲ isn't compli- ╱        ╲ DMD CHIP   ╱
      ╱ ant with the  ╲
      ╲ spec.?        ╱
             │No
             ▼
      ╱ Have line bar? ╲──Yes──▶╱ Adjust    ╲──No──▶╱ Change ╲──No──▶╱ Change     ╲──No──▶╱ Change     ╲
      ╲                ╱        ╲ frequency ╱       ╲ M/B    ╱       ╲ DMD Board  ╱       ╲ DMD CHIP   ╱
             │No
             ▼
      ╱ Have noise? ╲──Yes──▶╱ Adjust   ╲──No──▶╱ Change ╲
      ╲             ╱        ╲ tracking ╱       ╲ M/B    ╱
             │No
             ▼
        ╭─────────╮
        │   End   │
        ╰─────────╯
```

Color Adjust Procedure :

Notice : PC shall run R.G.B. gray scale pattern.

1. Power on. Press "Up", "Up", "Left" button when the "No Signal" show on the screen.
2. Choose "Display Source"
3. Choose Color Wheel Index.
4. Press "Left" or "Right" button to adjust.

Note 1 : It may need to be used when you replace Main Board or Optical Engine alone.

Function Troubleshooting

```
                    ┌─────────┐
                    │  Start  │
                    └────┬────┘
                         │
                         ▼
        ◇ Does OSD ──No──▶ ◇ Is KeyPad ──Yes──▶ ◇ Is Remote ──Yes──▶ ⬡ Change
          show up?          Board OK?              Controller           Main Board
            │                  │                   OK?
           Yes                 No                   │
            │                  ▼                    No
            │              ⬡ Change               ▼
            │                Key Pad Board       ⬡ Change ──No──▶ ⬡ Change
            │                                      Battery           Remote
            ▼                                                        Controller
        ◇ Can function ──No──▶ ◇ Is Keypad ──Yes──▶ ⬡ Change
          be adjusted?          Board ok?              Main Board
            │                      │
           Yes                     No
            │                      ▼
            ▼                  ⬡ Change Key-
         ┌──────┐                pad Board
         │ End  │
         └──────┘
```

Audio Troubleshooting

```
                    ┌─────────┐
                    │  Start  │
                    └────┬────┘
                         │
                         ▼
              ◇ Can hear ◇  ── No ──▶  ⬡ Change    ⬡ ── No ──▶  ⬡ Change   ⬡
              ◇  sound?  ◇             ⬡ Main Board ⬡            ⬡ Spearker ⬡
                 │
                Yes
                 │
                 ▼
         ◇ Sound is clear ◇ ── No ──▶ ⬡ Change  ⬡ ── No ──▶ ⬡ Change ⬡
         ◇ without noise? ◇            ⬡ Speaker ⬡           ⬡  M/B   ⬡
                 │
                Yes
                 │
                 ▼
              ┌─────────┐
              │   End   │
              └─────────┘
```

Remote Control Troubleshooting

```
                         ┌─────────┐
                         │  Start  │
                         └────┬────┘
                              │
                              ▼
                  ⬡ Replace the battery ⬡ ── Yes ──┐
                              │                      │
                             No                      │
                              ▼                      │
                  ⬡ Change Remote ⬡ ── Yes ──────────┤
                  ⬡  Controller   ⬡                  │
                              │                      │
                             No                      │
                              ▼                      │
                  ⬡ Change IR Board ⬡ ── Yes ────────┤
                              │                      │
                             No                      ▼
                              ▼              ┌─────────┐
                  ⬡ Change Main Board ⬡ ─ Yes ─▶│   End   │
                                             └─────────┘
```

Function Test and Alignment

Equipment Needed

Item	Description
1	IBM PC with XGA resolution (Color Video Signal & Pattern Generator)
2	VCR with Multi-system(NTSC/PAL/SECAM)
3	Chroma meter Minolta CL-100/T-10
4	Hi-Pot

Test Condition

Item	Description
1	Circumstance Brightness : Dark room less than 10 lux
2	Inspection Distance : 2.0m
3	Screen Size : 60 inches diagonal (wide)
4	Before function test and alignment, each PD520 should be run-in and warmed-up for at least 5 minutes with following conditions. 1.) In room temperature 2.) With cycled display colors (R,G,B,White) 3.) With cycled display modes 　　640 x 350 (H=31.5 KHz, V=70 Hz) 　　640 x 400 (H=31.5 KHz, V=70 Hz) 　　640 x 480 (H=37.5 KHz, V=75 Hz) 　　720 x 400 (H=31.5 KHz, V=70 Hz) 　　800 x 600 (H=53.7 KHz, V=85 Hz) 　　800 x 600 (H=37.9 KHz, V=60 Hz) 　　1024 x 768 (H=48.4 KHz, V=60 Hz) 　　1024 x 768 (H=68.7 KHz, V=85 Hz)
5	Test Display Mode and Pattern

Test Display Modes and Patterns

Compatible Modes

Analog :

Resolution	V-Sync(Hz)	H-Sync(KHz)	Compatibility
640 x 350	70	31.5	VGA
640 x 350	85	37.9	VGA
640 x 400	70	31.5	VGA
640 x 400	85	37.9	VGA
640 x 480	60	31.5	VGA
640 x 480	72	37.9	VGA
640 x 480	75	37.5	VGA
640 x 480	85	43.3	VGA
720 x 400	70	31.5	VGA
720 x 400	85	37.9	VGA
800 x 600	56	35.2	SVGA
800 x 600	60	37.9	SVGA
800 x 600	72	48.1	SVGA
800 x 600	75	46.9	SVGA
800 x 600	85	53.7	SVGA
1024 x 768	43.4	35.5	XGA
1024 x 768	60	48.4	XGA
1024 x 768	70	56.5	XGA
1024 x 768	75	60.0	XGA
1024 x 768	85	68.7	XGA
1280 x 1024	60	63.98	SXGA
1280 x 1024	75	79.98	SXGA
640 x 480	66.66	34.98	MAC LC 13"
640 x 480	66.68	35	MAC II 13"
832 x 624	74.55	49.725	MAC 16"
1024 x 768	75	60.24	MAC 19"
1152 x 870	75.06	68.68	MAC
640 x 480	60	31.35	MAC G4
640 x 480	120	68.03	MAC G4

Analog :

Resolution	V-Sync(Hz)	H-Sync(KHz)	Compatibility
1024 x 768	120	97.09	MAC G4
640 x 480	117	60	i MAC DV
800 x 600	95	60	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	i MAC DV
1280 x 1024	85	90.9	i MAC DV

Digital :

Resolution	V-Sync(Hz)	H-Sync(KHz)	Compatibility
640 x 350	70	31.5	VGA
640 x 350	85	37.9	VGA
640 x 400	70	31.5	VGA
640 x 400	85	37.9	VGA
640 x 480	60	31.5	VGA
640 x 480	72	37.9	VGA
640 x 480	75	37.5	VGA
640 x 480	85	43.3	VGA
720 x 400	70	31.5	VGA
720 x 400	85	37.9	VGA
800 x 600	56	35.2	SVGA
800 x 600	60	37.9	SVGA
800 x 600	72	48.1	SVGA
800 x 600	75	46.9	SVGA
800 x 600	85	53.7	SVGA
1024 x 768	60	48.4	XGA
1024 x 768	70	56.5	XGA
1024 x 768	75	60.0	XGA

Function Test Display Pattern

Item	Test Content	Pattern	Specification	Remark
1	Frequency & Tracking	Fine Line Moire	Eliminate visual wavy noise.	Figure 1
2	Contrast/Brightne-ss	Gray Scale	Gray levels should be distinguishable.	Figure 2
3	R, G, B and White Color Performance	R, G, B and White Color	Each R, G, B color should be normal.	Figure 3~6
4	Screen Uniformity & Flicker	Full White	Should be compliant with the like new spec.	Figure 6
5	Dead/Blemish Pixel	R, G, B, White, Dark, Blue 180, Gray 30	The numbers of dead/blemish pixels should be compliant with the like new spec.	Figure 3~9
6	Boundary	Boundary Frame	Horz. and Vert. position of video shuld be adjustable to be within the screen frame.	Figure 7

Fine Line Morie Pattern (Figure 1)
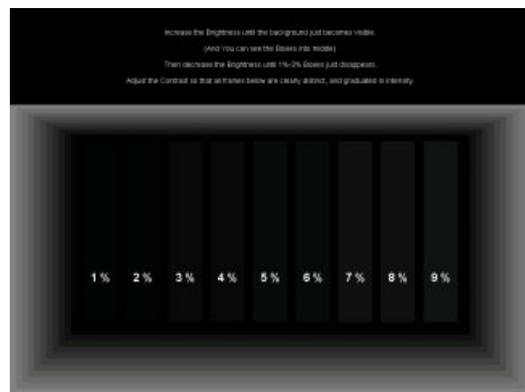
Contrast & Brightness (Figure 2)


R. Color Pattern (Figure 3)


G. Color Pattern (Figure 4)

B. Color Pattern (Figure 5)
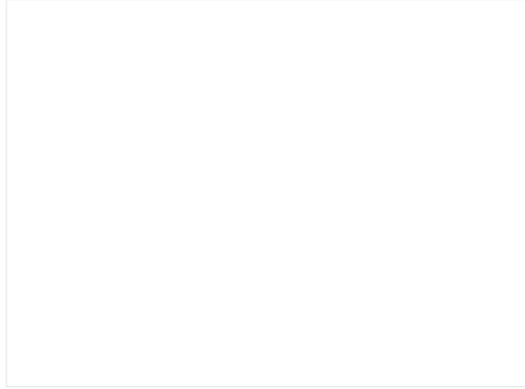

Full White Pattern (Figure 6)
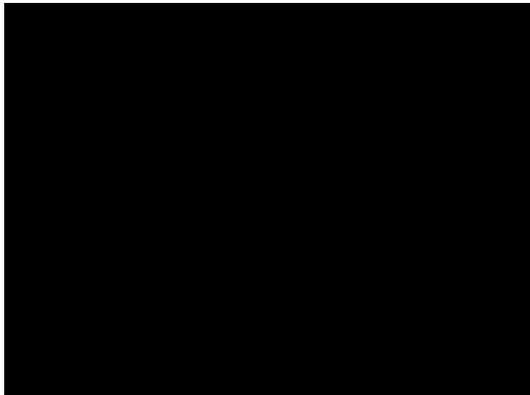
Dark Pattern (Figure 7)
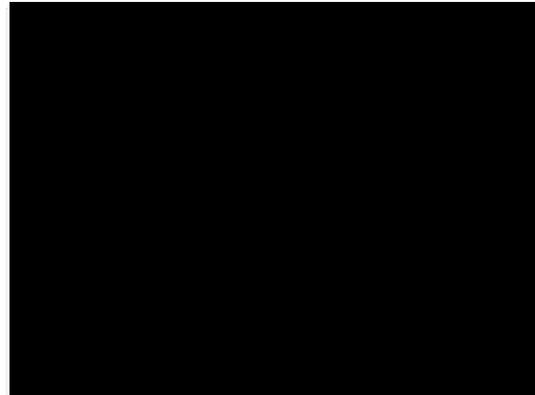
Gary 30 Pattern (Figure 8)

Blue 180 Pattern (Figure 9)
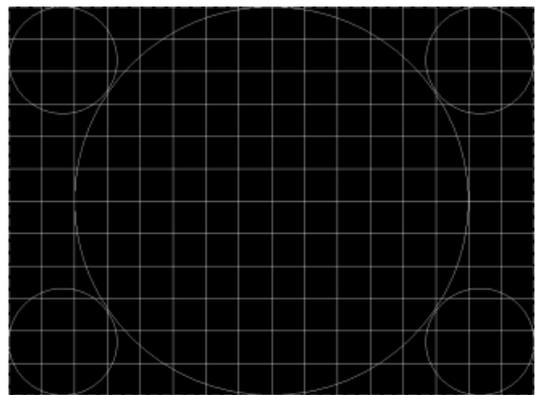
Boundary Frame (Figure 10)

Inspection Procedure

No.	Item	Description
1	RESET	Please press Menu button on the projector panel to enter Image-II Function then choose Reset Function, press Left Button to choose YES and to see if it works. This action will allow you to erase all end-users settings and restore the original factory setting.
2	Hi-Pot and Grounding Test	* Hi-Pot Specification : 1.5kVAC, 10mA, 2 seconds. * Grounding Specification : 12VDC, 25A, 0.1 ohm.
3	Clock and Clock Phase	Test Signal : 1024 x 768 @ 75Hz Test Pattern : Line Moire Pattern * Check and see if image sharpness and focus is well performed. * If not, readjust by following steps. - Enter Image-II menu and select Frequency Function to adjust the total pixel number of pixel clock in one line period. - Then select Tracking Function and use right or left arrow key to adjust the value to minimize video flicker.
4	R, G, B and White Colors Contrast	Test Signal : 1024 x 768 @ 75Hz Test Pattern : 64 or 16 R, G, B and White colors Intensities Pattern * Please check and see if each colors is normal and distinguishable. * If not, please return the unit to repair area.
5	Screen Uniformity and Flicker	Test Signal : 1024 x 768 @ 75Hz Test Pattern : Full White Pattern * Please check and see if its in normal condition. * If not, please return the unit to repair area.
6	Dead Pixel/Blemish Pixel	Test Signal : 1024 x 768 @ 75Hz Test Pattern : Gray 30, Blue 180, White, Dark, Red, Green and Blue Pattern * Please check and see if there are dead pixels on DMD chip. * The total numbers and distance of dead pixels should be complaint with like new specification.

No.	Item	Description

7	Check for Secondary Display Modes	Test signal :
		1.) 640 x 350 @ 70.09 / 85.08Hz
		2.) 640 x 480 @ 72.81 / 75.00 / 85.01Hz
		3.) 720 x 400 @ 70.08 / 85.04Hz
		4.) 800 x 600 @ 56.25 / 60.32 / 72.19 / 75.00 /
		    85.06Hz
		5.) 832 x 624 @ 74.55Hz
		6.) 1024 x 768 @ 43.48 / 60.00 / 70.00 / 75.03 /
		    85.00Hz

		Normally when the primary mode 1024 x 768 @ 85Hz is well adjusted and complaint with the like new specification, then the secondary display modes will be great possibility to be complaint with the specification. But we still have to check with general test pattern to make sure every secondary modes is complaint with like new specification.
8	Factory Reset	After final QC step, we have to erase all saved change again and restore the factory defaults. Please select and enter Factory Reset Function to see if it is workable. This action will allow you erase all end-users settings and restore the original factory setting.

Connector Information

Introduction

This section provides each connector location on boards, signal and function of each board. They will be useful for your detecting the defective boards.

DMD Board

Summarize

| Connector	Description
J501	Color Wheel Connector
J1	To Main Board Connector

The Locations of Connectors

J1
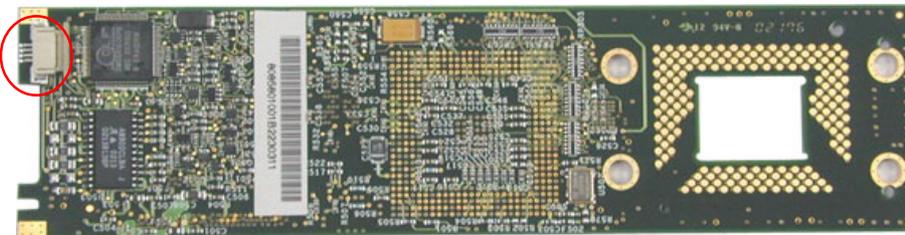
J501

J501 : Color Wheel Connector

PIN#	Signal Name	Description
1	CWCTR	Color Wheel Motor Drive Signal
2	CWY3	Color Wheel Motor Drive Signal
3	CWY2	Color Wheel Motor Drive Signal
4	CWY1	Color Wheel Motor Drive Signal

J1 : To Main Board Connector

PIN#	Signal Name	Description
1	GND	Ground
2	GY6	Digital Green Signal Input
3	GY7	Digital Green Signal Input
4	GND	Ground
5	GND	Ground
6	GY4	Digital Green Signal Input
7	GY5	Digital Green Signal Input
8	GND	Ground
9	GND	Ground
10	GY2	Digital Green Signal Input
11	GY3	Digital Green Signal Input
12	GND	Ground
13	GND	Ground
14	GY0	Digital Green Signal Input
15	GY1	Digital Green Signal Input
16	GND	Ground
17	GND	Ground
18	RV6	Digital Red Signal Input
19	RV7	Digital Red Signal Input
20	GND	Ground
21	GND	Ground
22	RV4	Digital Red Signal Input
23	RV5	Digital Red Signal Input
24	GND	Ground
25	GND	Ground
26	RV2	Digital Red Signal Input
27	RV3	Digital Red Signal Input
28	GND	Ground
29	GND	Ground
30	RV0	Digital Red Signal Input

PIN#	Signal Name	Description
31	RV1	Ditigal Red Signal Input
32	GND	Ground
33	GND	Ground
34	BU6	Ditigal Blue Signal Input
35	BU7	Ditigal Blue Signal Input
36	GND	Ground
37	GND	Ground
38	BU4	Ditigal Blue Signal Input
39	BU5	Ditigal Blue Signal Input
40	GND	Ground
41	GND	Ground
42	BU2	Ditigal Blue Signal Input
43	BU3	Ditigal Blue Signal Input
44	GND	Ground
45	GND	Ground
46	BU0	Ditigal Blue Signal Input
47	BU1	Ditigal Blue Signal Input
48	GND	Ground
49	GND	Ground
50	OLACT	Overlay Active
51	ACTDATA	Data Enable
52	GND	Ground
53	GND	Ground
54	HSYNCZ	Horizontal Sync.
55	VSYNCZ	Vertical Sync.
56	GND	Ground
57	GND	Ground
58	SYNCVAL	Sync. Valid
59	CLKIN	Data Clock
60	GND	Ground

PIN#	Signal Name	Description
61	GND	Ground
62	LAMPEN	Lamp Enable
63	RESETZ	Reset Sync.
64	LAMPLITZ	Lamp Lit
65	PWRGOOD	Power Good Sync.
66	LAMPSYNC	Lamp Sync.
67	ARMTEST1	Test Point
68	PWM0	Test Point
69	ARMTEST2	Test Point
70	PWM1	Test Point
71	SDA0	Serial Data
72	GND	Ground
73	GND	Ground
74	SCL1	Serial Clock
75	SCL0	Serial Clock
76	GND	Ground
77	GND	Ground
78	SDA1	Serial Data
79	P3P3V_IN	+3.3V
80	GND	Ground
81	P3P3V_IN	+3.3V
82	TSTPNT0	Test Point
83	P3P3V_IN	+3.3V
84	TSTPNT1	Test Point
85	P3P3V_IN	+3.3V
86	TSTPNT2	Test Point
87	GND	Ground
88	TSTPNT3	Test Point
89	P2P5V_IN	+2.5V
90	P2P5V_IN	+2.5V

PIN#	Signal Name	Description
91	P2P5V_IN	+2.5V
92	P2P5V_IN	+2.5V
93	P2P5V_IN	+2.5V
94	P2P5V_IN	+2.5V
95	P2P5V_IN	+2.5V
96	P2P5V_IN	+2.5V
97	CWINDEX	Color Wheel Index
98	GND	Ground
99	GND	Ground
100	USBP	No Connection
101	PWM2	Test Point
102	GND	Ground
103	GND	Ground
104	USBN	No Connection
105	P5V_IN	+5V
106	GND	Ground
107	P5V_IN	+5V
108	P12V_IN	+12V
109	GND	Ground
110	P12V_IN	+12V
111	TCK	Test Point
112	GND	Ground
113	GND	Ground
114	SPARE64	Test Point
115	TD1	Test Point
116	TRSTZ	Test Point
117	TMS1	Test Point
118	TMS2	Test Point
119	TDO1	Test Point
120	TDO2	Test Point

Main Board

Summarize

Connector	Description
J10	Speaker Connector
J6	To Keypad Interface Connector
J3	RCA-Jack_IP Connector
J4	S-VHS Connector
J5	To DMD Board Connector
J7	To Thermal Board
J1	VESA M1-Display Interface Connector
J9	Audio In Connector

The Locations of Connectors
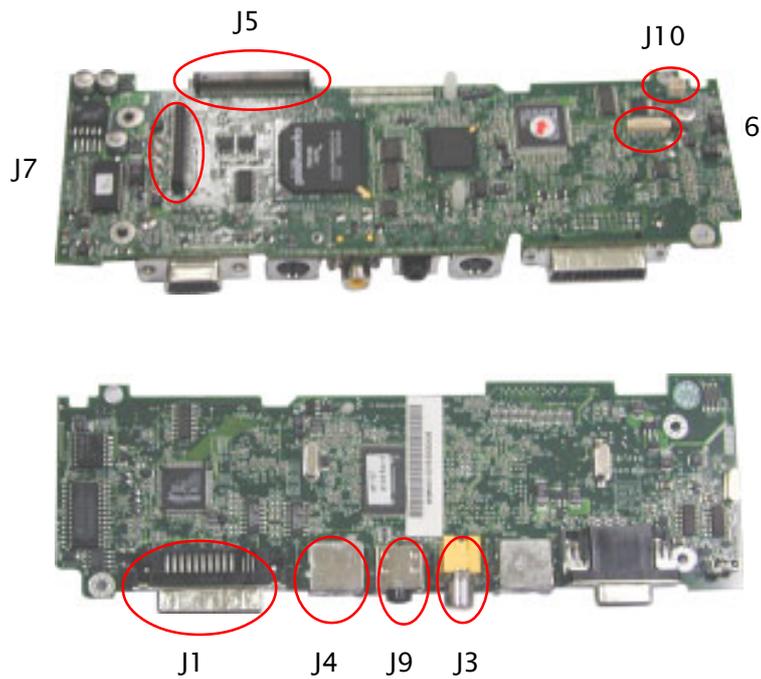
J10 : Speaker Connector

PIN#	Signal Name	Description
1	SPEAKER+	To Speaker +
2	SPEAKER -	To Speaker -

J6 : To Keypad Interface Connector

PIN#	Signal Name	Description
1	+3.3V	+3.3V
2	MENU	Keypad Menu Control
3	MENU-U	Keypad Up Control
4	MENU-D	Keypad Down Control
5	MENU-L	Keypad Left Control
6	MENU-R	Keypad Right Control
7	PWBOTTON	Power Button Control
8	+3.3V	+3.3V
9	GND	Ground
10	GND	Ground
11	LED1	LED1
12	LED2	LED2
13	PW_LED	Power LED
14	GND	Ground

J3 : RCA-Jack_IP Connector

PIN#	Signal Name	Description
1	CVIDEO	Composite Video Input
2	GND	Ground

J4 : S-VHS Connector

PIN#	Signal Name	Description
1	GND	Ground
2	GND	Ground
3	SVIDEO1	Luminance Signal Input
4	SVIDEO2	Chrominance Signal Input

J5 : To DMD Board Connector

PIN#	Signal Name	Description
1	GND	Ground
2	GD6	Green Data
3	GD7	Green Data
4	GND	Ground
5	GND	Ground
6	GD4	Green Data
7	GD5	Green Data
8	GND	Ground
9	GND	Ground
10	GD2	Green Data
11	GD3	Green Data
12	GND	Ground
13	GND	Ground
14	GD0	Green Data
15	GD1	Green Data
16	GND	Ground
17	GND	Ground
18	RD6	Red Data
19	RD7	Red Data
20	GND	Ground
21	GND	Ground
22	RD4	Red Data
23	RD5	Red Data
24	GND	Ground
25	GND	Ground
26	RD2	Red Data
27	RD3	Red Data
28	GND	Ground
29	GND	Ground
30	RD0	Red Data

PIN#	Signal Name	Description
31	RD1	Red Data
32	GND	Ground
33	GND	Ground
34	BD6	Blue Data
35	BD7	Blue Data
36	GND	Ground
37	GND	Ground
38	BD4	Blue Data
39	BD5	Blue Data
40	GND	Ground
41	GND	Ground
42	BD2	Blue Data
43	BD3	Blue Data
44	GND	Ground
45	GND	Ground
46	BD0	Blue Data
47	BD1	Blue Data
48	GND	Ground
49	GND	Ground
50	OLACT	Overlay Active
51	ACTDATA	Data Enable
52	GND	Ground
53	GND	Ground
54	HSYNCZ	Horizontal Sync.
55	VSYNCZ	Vertical Sync.
56	GND	Ground
57	GND	Ground
58	SYNCVALD	Sync. Valid
59	DCLKOZ	Data Clock Output
60	GND	Ground

PIN#	Signal Name	Description
61	GND	Ground
62	LAMPEN	Lamp Enable
63	RESETZ	Reset
64	LAMPLITZ	Lamp Lit
65	PWRGOOD	Power Good
66	LAMPSYNC	Lamp Sync.
67	ARMTEST1	Test Point
68	PWM0	Test Point
69	ARMTEST2	Test Point
70	PWM1	Test Point
71	SDA	Serial Data
72	GND	Ground
73	GND	Ground
74	SCL1	Serial Clock
75	SCL	Serial Clock
76	GND	Ground
77	GND	Ground
78	SDA1	Serial Data
79	+3.3VIN	+3.3V
80	GND	Ground
81	+3.3VIN	+3.3
82	TSTPNT0	Test Point
83	+3.3VIN	+3.3
84	TSTPNT1	Test Point
85	+3.3VIN	+3.3
86	TSTPNT2	Test Point
87	GND	Ground
88	TSTPNT3	Test Point
89	+2.5VDMD	+2.5V
90	+2.5VDMD	+2.5V

PIN#	Signal Name	Description
91	+2.5VDMD	+2.5V
92	+2.5VDMD	+2.5V
93	+2.5VDMD	+2.5V
94	+2.5VDMD	+2.5V
95	+2.5VDMD	+2.5V
96	+2.5VDMD	+2.5V
97	CWINDEX	Color Wheel Index
98	GND	Ground
99	GND	Ground
100	N.C.	No Connection
101	PWM2	Test Point
102	GND	Ground
103	GND	Ground
104	N.C.	No Connection
105	+5V	+5V
106	GND	Ground
107	+5V	+5V
108	+12V	+12V
109	GND	Ground
110	+12V	+12V
111	TCK	Test Point
112	GND	Ground
113	GND	Ground
114	SPARE64	Test Point
115	TD1	Test Point
116	TRSTZ	Test Point
117	TMS1	Test Point
118	TMS2	Test Point
119	TDO1	Test Point
120	TDO2	Test Point

J7 : To Thermal Board

PIN#	Signal Name	Description
1	GND	Ground
2	GND	Ground
3	+5V	+5V
4	+5V	+5V
5	+5V	+5V
6	+5V	+5V
7	GND	Ground
8	+5V	+5V
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	GND	Ground
13	+12V	+12V
14	+12V	+12V
15	GND	Ground
16	GND	Ground
17	+3.3VIN	+3.3V
18	+3.3VIN	+3.3V
19	+3.3VIN	+3.3V
20	+3.3VIN	+3.3V
21	GND	Ground
22	GND	Ground
23	+5VSBY	+5V
24	+5VSBY	+5V
25	GND	Ground
26	PW_LED	Power LED
27	PWBOTTON	Standby Sync.
28	IR_ONOFF	IR_ONOFF
29	CWINDEX	Color Wheel Index
30	LAMPEN	Lamp Enable

PIN#	Signal Name	Description
31	LAMPLITZ	Lamp Lit
32	SHUTDW#	Shut Down
33	PWRGOOD	Power Good
34	ERR_OUT	Error Sync. Output
35	TSDA	Serial Data
36	IR_R	IR_Data
37	TSCL	Serial Clock
38	HPDPCNT	+12V
39	LED1	LED1
40	LED2	LED2

J1 : VESA M1-Display Interface Connector

PIN#	Signal Name	Description
1	RX2+	Transmit Data
2	RX2-	Transmit Data
3	RX2 Shield	Ground
4	RXC Shield	Ground
5	HSYNC	Analog Horizontal Sync. Input
6	VSYNC	Analog Vertical Sync. Input
7	N.C.	No Connection
8	+5VHPD	+5V
9	N.C.	No Connection
10	N.C.	No Connection
11	RX1+	Transmit Data
12	RX1-	Transmit Data
13	RX1 Shield	Ground
14	RXC+	Transmit Data
15	RXC-	Transmit Data
16	USB_D+	Remote Mouse USB+
17	USB_D-	Remote Mouse USB-
18	N.C.	No Connection
19	EDID_W	EDID Write USE
20	DWLOAD	Firmware Download Use

PIN#	Signal Name	Description
21	RX0+	Transmit Data
22	RX0-	Transmit Data
23	RX0 Shield	Ground
24	USB +5V Input	+5V
25	GND	Ground
26	DDCDAT	DDC Data
27	DDCCLK	DDC Clock
28	DDC+5V	+5V
29	M1_RXD	Firmware Download Use
30	M1_TXD	Firmware Download Use
C1	VGAIN_R	Analog Red Sync. Input
C2	VGAIN_G	Analog Green Sync. Input
C3	VGAIN_B	Analog Blue Sync. Input
C4	VGAIN_B	Analog Blue Sync. Input
C5	Video Return	Ground

J9 : Audio In Connector

PIN#	Signal Name	Description
1	GND	Ground
2	AIN_R	Audio Right Channel Input
3	AIN_L	Audio Right Channel Input
4	N.C.	No Connection
5	N.C.	No Connection

Keypad Board

Summarize

Connector	Description
J1	Keypad Connector

The Locations of Connectors

J1
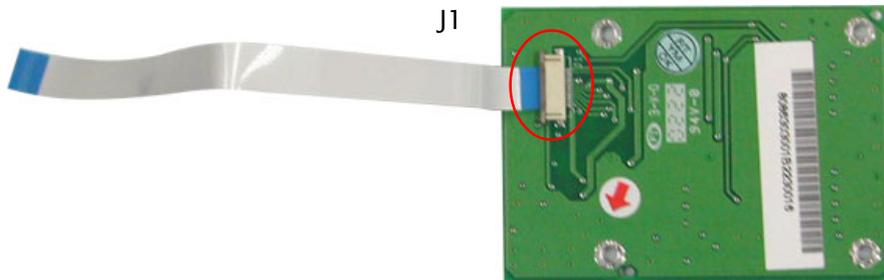
J501 : Color Wheel Connector

PIN#	Signal Name	Description
1	+5V	+5V
2	MENU	Keypad Menu Control
3	MENU-U	Keypad Up Control
4	MENU-D	Keypad Down Control
5	MENU-L	Keypad Left Control
6	MENU-R	Keypad Right Control
7	PWBOTTON	Power Button Control
8	+5VSB	+5V
9	GND	Ground
10	GND	Ground
11	LED1	LED1
12	LED2	LED2
13	PW_LED	PW_LED
14	GND	Ground

Thermal Board

Summarize

Connector	Description
J5	Fan3 Connector
J3	Fan2 Connector
J8	Thermal Switch Connector
J6	Photo Sensor Connector
J2	Fan4 Connector
J4	Fan1 Connector
J10	IR Receiver Connector
J11	To Lamp Ballast Connector
J7	To DC-DC Connector
JP2	To Main Board Connector

The Locations of Connectors
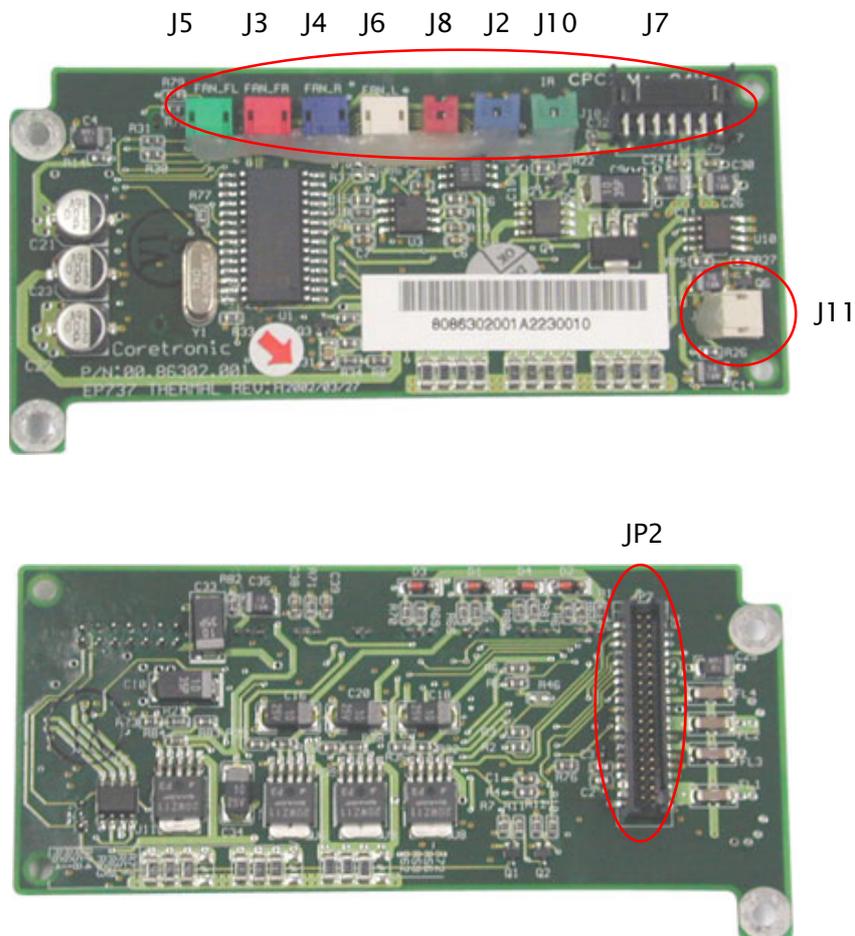
J5 : Fan3 Connector

PIN#	Signal Name	Description
1	FAN_POWER3	Fan3 Power
2	FAN_LOCK	FAN Lock Sync.
3	GND	Ground

J3 : Fan2 Connector

PIN#	Signal Name	Description
1	FAN_POWER2	Fan2 Power
2	FAN_LOCK	FAN Lock Sync.
3	GND	Ground

J8 : Thermal Switch Connector

PIN#	Signal Name	Description
1	THERMAL ERROR#	Thermal Error Sync.
2	GND	Ground

J6 : Photo Sensor Connector

PIN#	Signal Name	Description
1	GND	Ground
2	PHOTO_IN	Photo Sensor Input Signal
3	+3.3V	+3.3V

J2 : Fan4 Connector

PIN#	Signal Name	Description
1	FAN_POWER4	Fan1 Power
2	FAN_LOCK	Fan Lock Sync.
3	GND	Ground

J4 : Fan1 Connector

PIN#	Signal Name	Description
1	FAN_POWER1	Fan1 Power
2	FAN_LOCK	Fan Lock Sync.
3	GND	Ground

J10 : IR Receiver Connector

PIN#	Signal Name	Description
1	IR_R	IR Receiver
2	GND	Ground
3	+5VSBY	+5V Standby Power

J11 : To Lamp Ballast Connector

PIN#	Signal Name	Description
1	LAMPEN_OUT	Lamp Enable Sync.
2	GND	Ground
3	LAMPLIT_IN	Lamp Lit Feedback Sync.

J7 : To DC-DC Connector

PIN#	Signal Name	Description
1	LAMPEN_OUT	Lamp Enable
2	+3.3VSBY	+3.3V
3	+5VSBY	+5V
4	GND	Ground
5	GND	Ground
6	+13.1VSBY	+13.1V
7	+13.1VSBY	+13.1V
8	N.C.	No Connection
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	+5VSBY	+5V
13	+13.3VSBY	+3.3V
14	LAMPLIT_IN	Lamp Lit

JP2 : To Main Board Connector

PIN#	Signal Name	Description
1	GND	Ground
2	GND	Ground
3	+5V	+5V
4	+5V	+5V
5	+5V	+5V
6	+5V	+5V
7	GND	Ground
8	+5V	+5V
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	GND	Ground
13	+12V	+12V
14	+12V	+12V
15	GND	Ground
16	GND	Ground
17	+3.3V	+3.3V
18	+3.3V	+3.3V
19	+3.3V	+3.3V
20	+3.3V	+3.3V
21	GND	Ground
22	GND	Ground
23	+5VSBY	+5V
24	+5VSBY	+5V
25	GND	Ground
26	PW_LED	Power LED
27	PWBOTTON	Standby Sync.
28	IR_ONOFF	IR_ONOFF
29	CWINDEX	Color Wheel Index
30	LAMPEN	Lamp Enable

PIN#	Signal Name	Description
31	LAMPLIT	Lamp Lit
32	SHUT_DOWN#	Shut Down Sync.
33	PWRGOOD	Power Good
34	ERR_OUT	Thermal Error Sync.
35	TSDA	Serial Data
36	IR_R	IR_Data
37	TSCL	Serial Clock
38	+13.1VSBY	+13.1V
39	LED1	LED1
40	LED2	LED2

DC-DC Board

Summarize

Connector	Description
J2	Interlock Connector
J1	To Ballast Connector
J4	To Thermal Board Connector

The Locations of Connectors
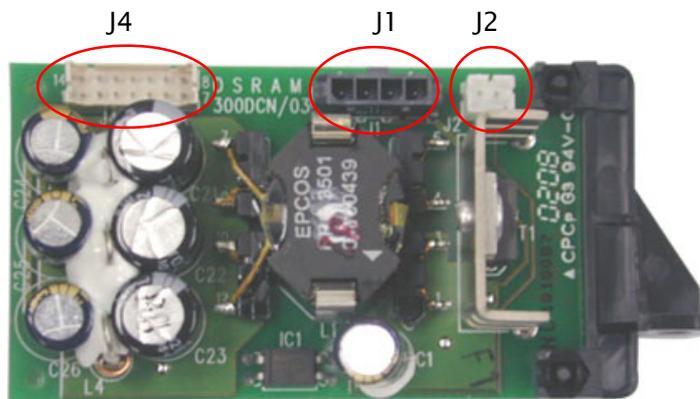
J2 : Interlock Connector

PIN#	Signal Name	Description
1	LAMP INTERLOCK	Lamp Door Interlock
2	LAMP INTERLOCK	Lamp Door Interlock

J1 : To Ballast Connector

PIN#	Signal Name	Description
1	SYSTEM POWER	+400V
2	N.C.	No Connection
3	GND	Ground
4	SYSTEM POWER	+12V

J4 : To Thermal Board Connector

PIN#	Signal Name	Description
1	LAMPEN_OUT	Lamp Enable Signal Output
2	+3.3VSBY	+3.3V Standby Power
3	+5VSBY	+5V Standby Power
4	GND	Ground
5	GND	Ground
6	+13.1 VSBY	+13.1V Standby Power
7	+13.1VSBY	+13.1V Standby Power
8	N.C.	No Connection
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	+5VSBY	+5V Standby Power
13	+3.3VSBY	+3.3V Standby Power
14	LAMPLIT_IN	Lamp Lit Signal Input

Ballast

Summarize

Connector	Description
CN3	Control Board Connector
CN1	Power Supply Connector

The Locations of Connectors

CN1   CN3
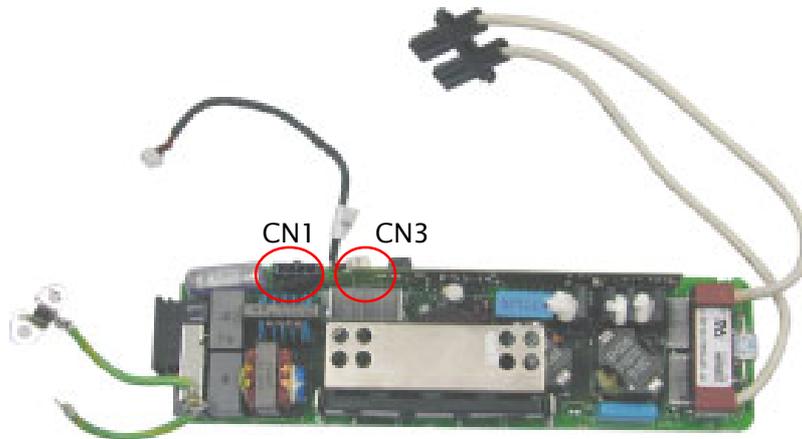
CN3 : Control Board Connector

PIN#	Signal Name	Description
1	LAMPEN_OUT	Start Control Input
2	GND	Ground
3	LAMPLIT	Fla Output

CN1 : Power Supply Connector

PIN#	Signal Name	Description
1	+400V	+400V
2	N.C.	No Connection
3	GND	Ground
4	VCC	+12V

FRU (Field Replaceable Unit) List

This chapter gives you FRU (Field Replaceable Unit) listing in global configuration of PD520.
Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).
Please note that WHEN ORDERING FRU PARTS, you should check the most up-to-date information
available on your regional web or channel. For whatever reasons a part number change is made, it will
not be noted on the printed Service Guide. For ACER AUTHORIZED SERVICE PROVIDERS, your Acer
office may have a DIFFERENT part number code from those given in the FRU list of this printed Service
Guide. You MUST use the local FRU list provided by your regional Acer office to order FRU parts for repair
and service of customer machines.

You might be able to access the website to obtain the latest spare parts information:
http://aicsl.acer.com.tw/spl/

NOTE: To scrap or to return the defective parts, you should follow the local government ordinance or
regulations on how to dispose it properly, or follow the rules set by your regional Acer office on
how to return it.

FRU List

Photo	Part Name	Description	P/N
BOARD			
	DC TO DC BOARD	ASSY DC TO DC QUASARPOWER EP737	55.310VH.002
	BALLAST MODULE INCLUDES CABLE	ASSY BALLAST MODULE	55.520VH.001
	PHOTO SENSOR BOARD 170MM BLUE	ASSY PHOTO-SENSOR-BD UL1007#28 170MM BLUE	55.520VH.002
	PCBA MAIN BOARD	PCBA MAIN BOARD EP737	55.520VH.003
	PCBA THERMAL BOARD	PCBA THERMAL BAORD	55.520VH.004
	PCBA KEYPAD BOARD	PCBA KEYPAD BOARD	55.520VH.005
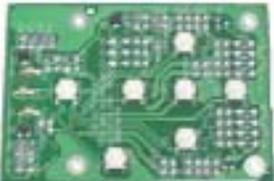
Photo	Part Name	Description	P/N
	PCBA DMD BOARD 54 BALL RAMBUS	PCBA DMD BOARD 54 BALL RAMBUS EP737	55.520VH.006
	IR SENSOR BOARD	ASSY IR SENSOR 3P#28 UL1007 160MM GREEN EP737	55.520VH.007
CABLES			
	LIMIT SWITCH CHERRY	ASSY LIMIT SWITCH CHERRY DB1C A1LB-5A EP737	50.520VH.001
	BD/FRONTEND BD	CABLE FFC 14P 0.5itch 140MM KEY BD/ FRONTEND BD	50.520VH.002
	BD/BALLAST	W.A. 14*26 50MM UL1061 THERMAL BD/ BALLAST	50.520VH.002
	CABLE W.A. 3P #28 125MM BALLAST / THERMAL BD	W.A.3P#28 125MM BALLAST / THERMAL BD	50.520VH.005

Photo	Part Name	Description	P/N
CASE/COVER/BRACLET ASSEMBLY			
	DC TO DC BOARD HOLDER	DC TO DC BOARD HOLDER	42.310VH.006
	FUSE COVER PH-1L-UL	FUSE COVER (FH-1L-UL)	42.310VH.007
	DMD HOLDER	DMD HOLDER DDR 07 UL TEM 2300	42.520VH.001
	LAMP BOTTOM COVER	FOR ACER	42.520VH.002
	KEY PAD PC+ABS C6200	KEY PAD PC+ABS C6200 HIGHT GLOSSY EP737 FOR ACER	42.520VH.003
	LED LENS	LED LENS PC	42.520VH.004
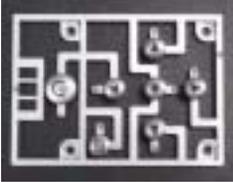
Photo	Part Name	Description	P/N
	FAN HOLDER FRONT COVER	FAN HOLDER FRONT COVER NORYL	33.520VH.001
	RIGHT COVER PC+ABS C6200 CS-CT53A	RIGHT COVER PC+ABS C6200 CS-CT53A EP737 FOR ACER	42.520VH.007
	FAN GUIDE FRONT	FAN GUIDE FRONT NORYL N300X	42.520VH.008
	LIMIT SWITCH HOLDER	LIMIT SWITCH HOLDER NORYL N300X	42.520VH.009
	ELEVATOR BRACKET	ELEVATOR BRACKET SUS304	33.520VH.001

Photo	Part Name	Description	P/N
	LIGHT CUT UP FOR LAMP MODULE	LIGHT CUT UP FOR LAMP MODULE AL	42.520VH.012
	LEFT COVER	LEFT COVER	42.520VH.014
	FRONT COVER MODULE CS-CT53A +IR COVER	BUY FRONT COVER MODULE CS-CT53A EP53A EP737 FOR ACER+IR COVER PAD FRONT + ELEVATOR PUSH BUTTON	60.520VH.001
	IO BEZEL MODULE	BUY ASSY IO BEZEL MODULE EP737 FOR ACER	60.520VH.002
	TOP HOUSING MODULE	ASSY TOP HOUSING MODULE PD520 FOR ACER (RMA)	60.520VH.003
	BOTTOM HOUSING MODULE	ASSY BOTTOM HOUSING MODULE PD520 FOR ACER (RMA)	60.520VH.004

Photo	Part Name	Description	P/N
	FOCUS RING FRONT	BUY ASSY FOCUS RING FRONT EP737 FOR ACER	47.520VH.017
	CONTACT HOUSING INTERCON	XGA	42.520VH.018
DIGITAL LIGHT DEVICE			
	DMD 1024*768 PI*EL DDR 0.7" XGA	DMD 1024*768 PI*EL DDR 0.7" XGA	57.520VH.001
	LAMP REPLACE MODULE	LAMP REPLACE MODULE	57.520VH.002
	ENGINE MODULE	ASSY SUB ENGINE MODULE PD520 FOR ACER (RMA)	TBD

Photo	Part Name	Description	P/N
	COLOR WHEEL MODULE	COLOR WHEEL MODULE	57.520VH.003
FAN			
	PANASONIC SCIROCCO FAN FAN3F12LH 50*20MM	PANASONIC SCIROCCO FAN FAN3F12LH 50*20MM	23.520VH.001
	MISC FAN SUNON 5010 L=300MM	MISC FAN SUNON 5010 L=300MM EP737	23.520VH.002
	MISC FNA SUNON 5015 L=70MM+BRACKER+RUBBER	MISC FAN SUNON 5015 L=70MM	23.520VH.003
HEATSINK			
	DMD HEATSINK	DMD-HEATSINK ADC6 EP737	34.520VH.001

Photo	Part Name	Description	P/N
MISCELLANEOUS			
	DC_DC _BD MYLAR	DC_DC _BD MYLAR 0.5t XB31 BLACK	47.520VH.001
	BALLAST MYLAR	BALLAST MYLAR FRPP FOR MAIN BOARD ADJUST EP737	47.520VH.002
	DMD-HEATSINK INSULATOR MYLAR EP737	DMD-SEATSINK INSULATOR MYLAR EP737	47.520VH.004
	RUBBER WASHER FOR DMD	RUBBER WASHER FOR DMD	47.520VH.005
	DMD HEATSINK THERMA L PAD 19*14*1t	DMD HEATSINK THERMAL PAD 19*14*1t	47.520VH.006
	FAN RUBBER FRONT COVER RUBBER	FAN RUBBER FRONT COVER RUBBER	47.520VH.007

Photo	Part Name	Description	P/N
	MAIN BOARD BOTTOM RUBBER	MAIN BOARD BOTTOM RUBBER	47.520VH.009
	ACER LOGO	ACER LOGO AL EP737	47.520VH.013
SCREWS			
	NYLON WASHER PG U-5 FOR BALLAST	NYLON WASHER PG U-5 FOR BALLAST	86.520VH.001
	PLASTIC SCREW M3.0*6.4 PG S-306-N66 XB31	PLASTIC SCREW M3.0*6.4 PG S-306-N66 XB31	86.520VH.005
SPEAKER			
	SPEAKER	SPEAKER 2W 40hm 51*20.1*13.1mm 80mm	23.520VH.005