DLP PROJECTOR

PB8250

SERVICE MANUAL

CONTENT

Chapter 1: Engineering Specifications

1.0 Optical Performance	Tested under 60" (diagonal) image size with wide projection lens position unless other specified. Measurement Details refer to Appendix A. Reference meter: Color: BenQ Measurement Center's spectral meter Others: BenQ G2 meter	
1.1 ANSI Brightness	Minimum 2400 Lumens (Spoke mode)	
1.2 Brightness Uniformity		
1.2.1 ANSI Uniformity	Minimum -50% (Spoke mode)	
1.2.1 JBMA Uniformity	Minimum 60% (Spoke mode)	
1.3 Contrast Ratio		
1.3.1 ANSI Contrast	Minimum 150:1	
1.3.2 FOFO Contrast	Minimum 1200:1(Spoke mode)	
1.3.2 JBMA Contrast	Minimum 1200:1(Spoke mode)	
1.4 Light Leakage		
1.4.1 Light Leakage in Active Area	<2 lux compared to center point within 60" (diagonal) image size	
1.4.1 Light Leakage out of Active Area	<2 lux between of 49" (diagonal) image size and 60" (diagonal) area	
1.5 Color	X	y
1.5.1 White	.300±.040	.330±.040
1.5.4 Red	.629±.040	.350±.040
1.5.5 Green	.326±.045	.565±.045
1.5.6 Blue	.143±.040	.080±.040
1.6 Color Uniformity	x	y
1.6.1 White	±.040	±.040
1.6.2 Red	±.040	±.040
1.6.3 Green	±.040	±.040
1.6.4 Blue	±.040	±.040
2.0 Image Quality		
2.1 Throw Ratio	60" ±5% Diagonal at 2m	

2.2 Zoom Ratio	>1.20:1
2.3 Distortion	
2.3.1 Keystone Distortion	<1.0%
2.3.2 Vertical TV Distortion	<1.0%
2.4 Projection Offset	133% ±5%
2.5 Focus Range	
2.5.1 Visible Range	1.0~8m
2.5.2 Focus Range	1.5~6m (Detail specified in 2.6)
2.6 Defocus	
2.6.1 ⊠ Pattern	(1) If pattern can be uniformly focused, pass! (2) If not, check 2.6.2
2.6.2 Defocus/Flare	Defocus: R<=2.5; G<=2.5; B<=2.5 pixel Flare: R<=3.5; G<=3.5; B<=3.5 pixel
2.7 Lateral Color	Center of 49" diagonal area: R/G<2/3; G/B<2/3; R/B<1 pixel Other: R/G<1; G/B<1; R/B<1 pixel
2.8 Image Quality	
2.8.1DMD image quality	See Appendix D
2.8.2 Image Imperfection	See Appendix D Blemish
3.0 Mechanical Specification	
3.1 Dimensions	236 x 319.5 x 93.3 mm (L x W x H) (Minimum Dimension) 236 x 319.5 x 105.2 mm (L x W x H) (Maximum Dimension)
3.2 Weight	3600g ± 100g
3.3 Security Slot	Kensington compatible slot 150N break away force
3.5 Lens Cover	Detached Lens Cover
3.6 Feet	Two fast adjustable front feet for tilt 0~6°, two adjustable rear feet for tilt –0.5~+2.2°.
4.0 Packaging	Detail refer to C309 (Packing Description)
4.1 Outside Dimensions	492 x 370 x 292mm (L x W x H)
4.2 Weight	6.2 Kg (Including Accessories, Projector)

4.3 Palletization	20 by Air; 728 / 40' container, or 336/20' container by sea	
5.0 Thermal Specification	Maximum temperature (0~40 Deg. C)	
5.1 Handles, knobs, grips, etc. and surface Held or touched for short periods only	Metal	Plastic
	60°C	85°C
5.2 Bottom surface	Metal	Plastic
	55°C@ 25°C	70°C@ 25°C
5.3 External surface or equipment which may be touched	Metal	Plastic
	70°C	95°C
5.4 Exhaust Air	95℃	
6.0 Environmental	Adhere to Appendix B	
6.1 Temperature	Operating	0~40°C, without condensation
	Storage	-20 ~ 60°C, without condensation
6.2 Humidity	Operating	10 - 90%RH, without condensation
	Storage	10 - 90%RH, without condensation
6.3 Audible Noise Level	Typical	Normal mode: 34dBA @ 25°C Eco mode: 32dBA @ 25°C
	Maximum	Normal mode: 35dBA @ 25°C Eco mode: 33dBA @ 25°C
6.4 Altitude	6000 feet above sea level@ 30°C 10000 feet above sea level@ 23°C	
6.5 Shock	Non-operating, 20 ms /50 G	
6.6 Drop	91cm, 1 selected corners, 3 selected edges and 6 primary surfaces. 1 drop per orientation, and total of 10 drops	
6.7 Vibration	Sine	5~200Hz, 1.5G, 1 octave/min,15 min dwell on each resonant frequency, all primary axis, one sweep (30 min minimum) per orientation, total of 90+ min.

	Random	5~100 Hz, 0dB/Oct, 0.015 (g2/Hz); 100~200 Hz, -6dB/Oct, N/A; 200Hz, N/A, 0.0038 (g2/Hz). Equivalent to 1.47 Grms, All primary axis, 20 min per orientation, total 60min.		
7.0 Regulatory	Safety	CUL, TUV-GS, PSE,CCC, CB Report, PSB, GOST-R, B-Mark		
	EMC	FCC Class B requirements, VCCI, MIC, C-Tick, CE Marks (73/23/EEC, 89/336/EEC)		
	ESD	Refer to Appendix B		
8.0 Reliability				
8.1 MTBF	20000 hours except for DMD chip, Color wheel, Lamp and Fan			
8.2 Lamp Lifetime	1500 hours (50% brightness maintenance)			
9.0 Power Requirements	Adhere to Appendix F			
9.1 Power Supply (Normal)	Voltage range : 90VAC – 264VAC Frequency range : 47Hz – 63Hz			
9.2 Power Consumption	Maximum	395W		
	Standby	≤15W		
9.3 Power Connector	Comply with safety regulation.			
10.0 Panel Specification				
10.1 Type	Single Chip 0.7" XGA 12° tilt DDR DMD			
10.2 Pixels	H: 1024 X V: 768			
10.3 Color Depth	24 Bits (16770000 colors)			
11.0 Compatibility				
11.1 PC	PC Compatible VGA, SVGA, XGA, SXGA; Macintosh Detailed Support Timing Specification refer to Appendix E.1			
	PC Frequency Limitation	H-Sync	24 ~ 88 KHz	
		V-Sync	48 ~ 100 Hz	
		Pixel Clock	140 MHz	
11.2 Video	NTSC/ NTSC4.43/ PAL (Including PAL-M, PAL-N)/			

	SECAM/ PAL60/
11.3 YpbPr	NTSC (480i)/ 480p/ PAL (576i)/ 576p, HDTV (720p/ 1080i)
11.4 DVI	PC Compatible VGA, SVGA, XGA;
11.5 DDC	DDC 2B
12.0 Image Interface	Adhere to Appendix E.2
12.1 Analog RGB Input	15 pin D-Sub (Female) x 1 G(Y): Video amplitude 0.7/1.0 Vp-p : Impedance 75 RB(CbCr): Video amplitude 0.7 Vp-p : Impedance 75 HD/VD/CS: TTL Level
12.2 Video Input	RCA jack (Yellow) Video amplitude 1.0 V_{p-p} : Impedance 75Ω
12.3 S-Video Input	4 pin Mini-Din (Female) Y: Luminance amplitude 1.0 V_{p-p} : Impedance 75Ω C: Chroma amplitude 0.268 V_{p-p} : Impedance 75Ω
12.4 YPbPr Input	15 pin D-Sub (Female) x 1 Y: Luminance amplitude 1.0 V_{p-p}: Impedance 75Ω PbPr/C_bC_r: Chroma amplitude 0.7 V_{p-p} : Impedance 75Ω
12.5 Analog RGB Output	15 pin D-Sub (Female) x 1 RGB: Video amplitude 0.7V_{p-p} : Impedance 75Ω HD/VD/CS: TTL Level
13.0 Control Interface	
13.1 IR Receiver	IR Receiver x2 (Front, Rear) Angle: 30° Distance 0~8m
13.2 Serial Connector	8 pin Mini-Din (Female) RS-232 Standard
13.3 USB Connector	B type USB terminal for mouse port
14.0 User Interface	
14.1 Operator Keypad	8 keys: Power, Auto, Source, Blank, Left, Right, Up, Down
14.2 Indicators	3 LEDs: Power On/Off, Lamp Status, Temperature Status
14.3 Electric Keystone	± 7°
15.0 Audio	
15.1 PC Audio Input	Connector: Φ3.5mm stereo mini jack

	Sensitivity: 500m V$_{rms}$±10%	
	Input impedance: >10 KΩ	
15.2 Speaker	8Ω 1W x 2	

Appendix A Optical Measurement Procedure

1. Scope:

This document describes critical optical related test definitions and Instructions for data or video projectors. The other general terminologies are specified in ANSI IT7.228-1997.

2. General Requirements

1. The unit under test should be allowed to stabilize without further adjustment for a minimum of 5 minutes, at nominal ambient room temperature of 25ºC, before making measurements.

2. Measurements shall take place in a light proof room, where the only source of illumination is the projector. Less than 1 lux of the light on the screen shall be from any source other than the projector.

3. All measurements shall be made on flat screens that do not provide any advantage to the performance of the unit.

4. All measurements shall be made at standard color temperature setting, 100% white image (per ANSI IT7.228-1997), except where noted.

3. Practical Requirements

1. When measuring contrast manually, operators should not wear white clothing since light reflected from white clothing can influence the measurement.

2. Unless otherwise specified, the projection lens is set in the widest zoom position since zoom function can influence the measurement.

3. Measurement should be performed with Minolta Chromameter, Model CL-100, or equivalent.

A1. ANSI BRIGHTNESS

ANSI Lumens = (L1+L2+L3+L4+L5+L6+L7+L8+L9)/9 (lux) x A(m^2)

A (Area) = W * H (m^2)

W: width of projected image (m)

H: height of projected image (m)
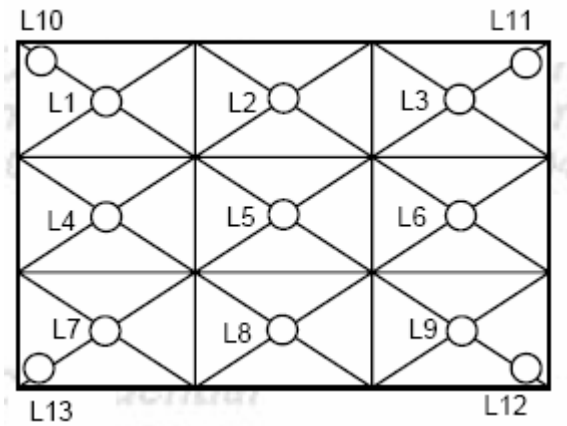
Note: L10, L11, L12, L13 are located at 10% of the distance from corner itself to L5

A2. ANSI UNIFORMITY

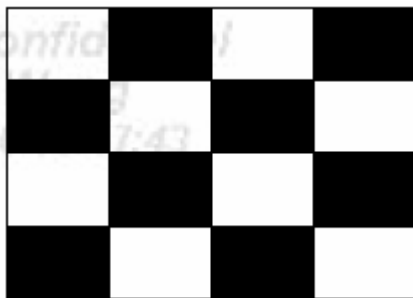ANSI +Uniformity= Maximum (L1~13)-Average (L1~9)/ Average (L1~9)%

ANSI -Uniformity= Minimum (L1~13)-Average (L1~9)/ Average (L1~9)%

A3. JBMA UNIFORMITY

JBMA Uniformity = Average (L1,L3,L7,L9)/ L5

A4. ANSI CONTRAST

ANSI Contrast = Average lux value of the white rectangles/Average lux value of the black rectangles

Contrast Ratio shall be determined from illuminance values obtained from a black-and-white "chessboard" pattern consisting of 16 equal rectangles. The white rectangles shall be at 100% gray and the black rectangles at 0% gray. Illuminance measurements shall be made at the center of each of the rectangles.

A5. FOFO CONTRAST

FOFO Contrast = Lux value at the center of a solid white screen/the lux value at the center of a solid black screen

A6. JBMA CONTRAST

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JBMA Contrast = Average (L1,L2,L3,L4,L5,L6,L7,L8,L9) under solid white / Average (L1,L2,L3,L4,L5,L6,L7,L8,L9) under solid black

A7. LIGHT LEAKAGE

Leakage = The maximum light leakage under a solid black pattern in or outside of the projected image

A8. IMAGE DISTORTION

Keystone = (W2-W1)/ (W1+W2) x 100%

Vertical TV dist = (H1+H2-2xH3)/2H2 x100%

Horizontal TV dist = (W1+W2-2xW3)/2W1 x100%

W1: image width at image bottom

W2: image width at image top

W3: image width at the half image height.

H1: image height at image left

H2: image height at image right

H3: image height at half image

Note:

1. Keystone and Vertical TV Distortion are recommended for Front Projection Display

2. Vertical and Horizontal TV Distortion are recommended for Rear Projection Display

A9. THROW RATIO

Throw ratio = projection distance / the width of the projected image

A10. ZOOM RATIO

Zoom ratio = maximum / minimum image diagonal size at a fixed projection distance

A11. FOCUS RANGE

The minimum/maximum focus distance is the minimum/maximum projection distance (The distance between the outermost element of projection lens and screen), expressed in meter, at which the image is still at its acceptable focus level.(acceptable focus level is specified by FOCUS LIMIT SAMPLE approved by customer)

A12. COLOR

Color is expressed as (x, y) in 1931CIE chromaticity values Note: Color is measured at the center of the screen that is entirely the measured color under default brightness and contrast settings.

A13. ANSI COLOR

ANSI Color is expressed as (u, v) in 1976 CIE chromaticity values Note: Color is measured at the

center of the screen that is entirely the measured color under default brightness and contrast settings.

A14. COLOR UNIFORMITY
Color Uniformity is the maximum color difference ($\triangle$x, $\triangle$y) between any two points out of L1~L13

A15. ANSI COLOR UNIFORMITY
ANSI Color Uniformity: $\triangle$u'v'= [(u'1-u'0)^2+(v'1-v'0)^2]^1/2
(u'0,v'0): the average color of L1~L13
(u'1,v'1): the spot with maximum deviation from (u'0,v'0)

A16. PROJECTION OFFSET
Projection Offset= Image height above projection lens optical axis / Total image height x 100%
Note: Optical engine should be kept horizontal attitude

A17. BLUE EDGE INSPECTION CRITERIA
The blue edge must invisible with blue pattern 171 (R=50/255, G=100/255, B=255/255)

A18. DEFOCUS AND FLARE TEST PROCEDURE
Procedure:
Step 1: Get best focus at Screen Center with **Pattern 1**
Step 2: Check specified screen sizes and zoom positions
Step 3: Use **Chart1** to measure Defocus and Flare for whole screen of R,G,B color at **Pattern 2,3,4** and record the maximum number
Example of 1.5 pixel flare:
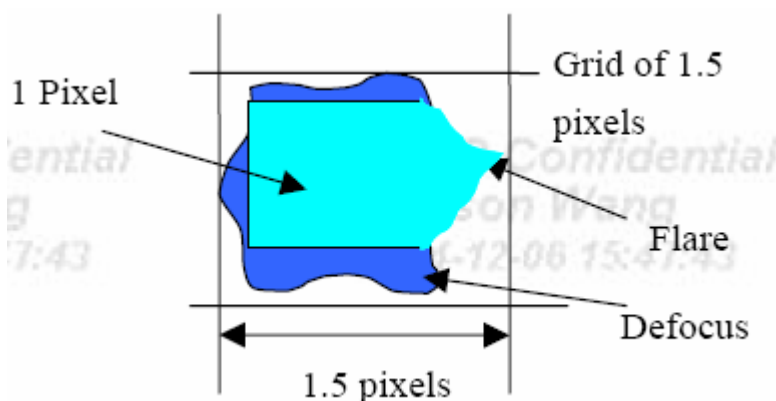
A19. LATERAL COLOR TEST PROCEDURE
Procedure:
Step 1: Get best focus at Screen Center with **Pattern 1**

Step 2: Check specified screen sizes and zoom positions

Step 3: Use **Chart1** to measure Lateral Color for whole screen with **Pattern 5** and record the maximum number

Example if 0.6 pixel lateral color:
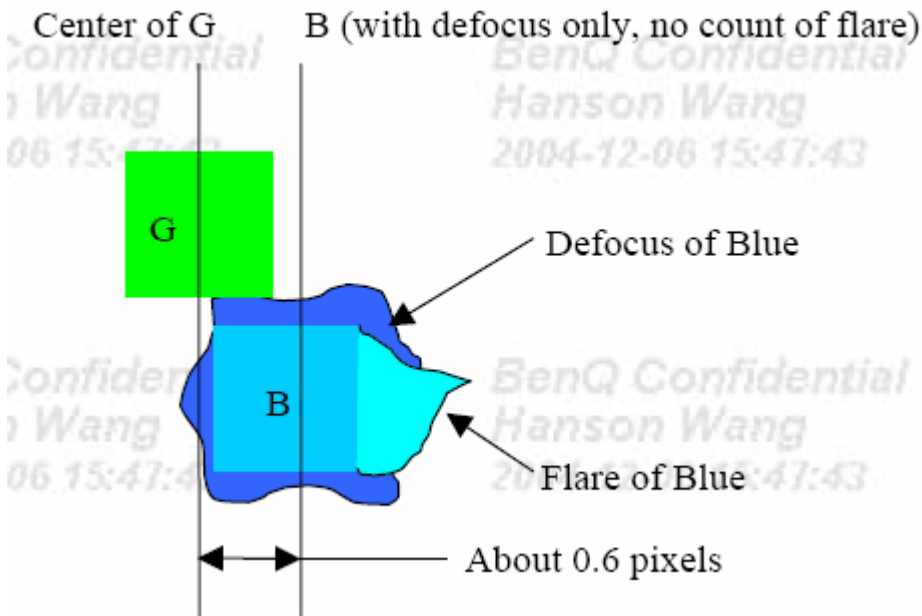
## A20. LAMP LIFETIME TEST PROCEDURE

50% lamp brightness maintenance under 3.5hr ON, 0.5hr OFF cycling test

A21. LIGHT LEAKAGE SPECIFICATION

Test under tele 47" to 60"
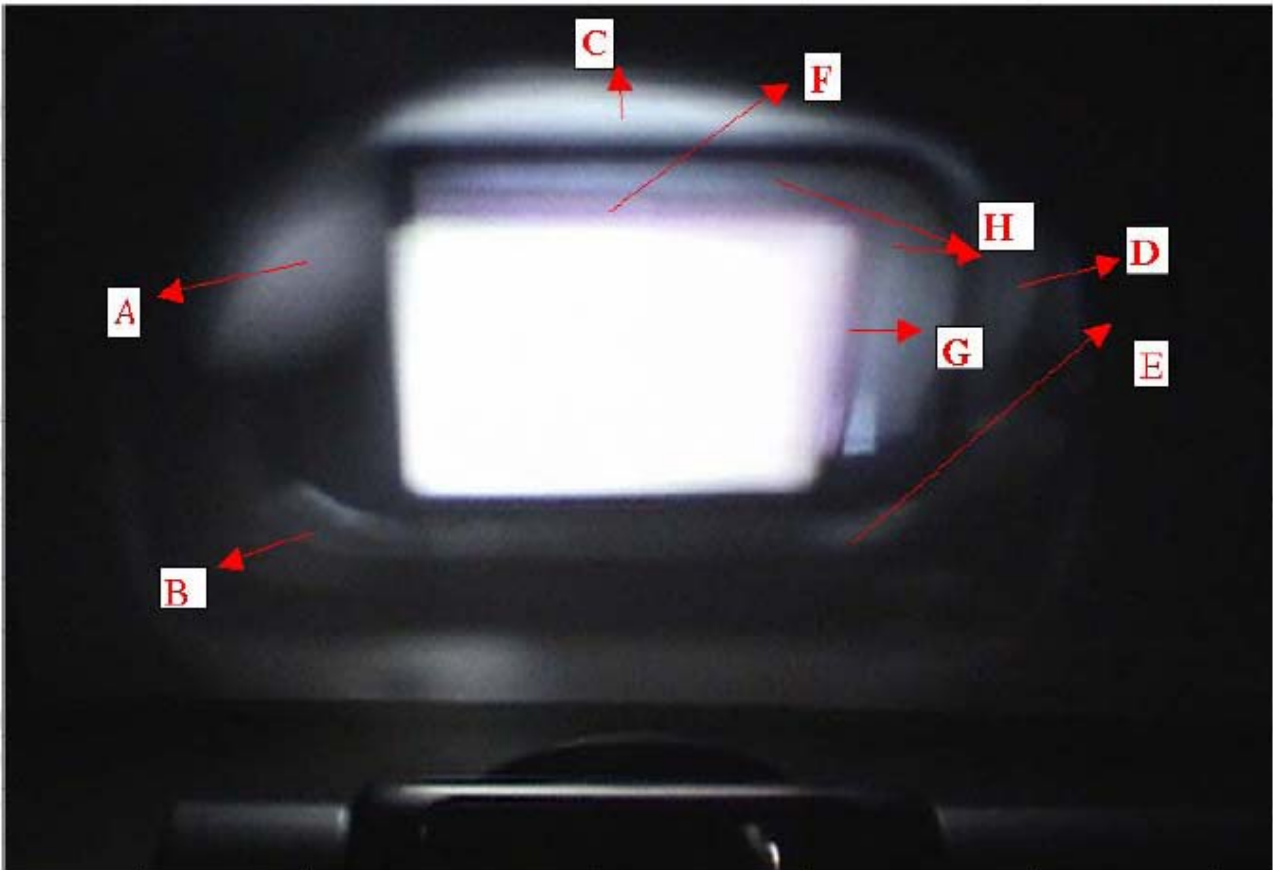
		Specification	Measure	Cause
Out Of A.A	A	<2 lux	0.16	Tube
	B	<2 lux	0.18	Baffle
	C	<2 lux	0.41	Baffle
	D	<2 lux	0.08	Baffle
	E	<2 lux	0.06	Baffle
	F	<2 lux	0.12	Purple Border
	G	<2 lux	0.14	Purple Border
	H	<2 lux	0.11	Flat State
Inside A.A	Dark C.U	<40		
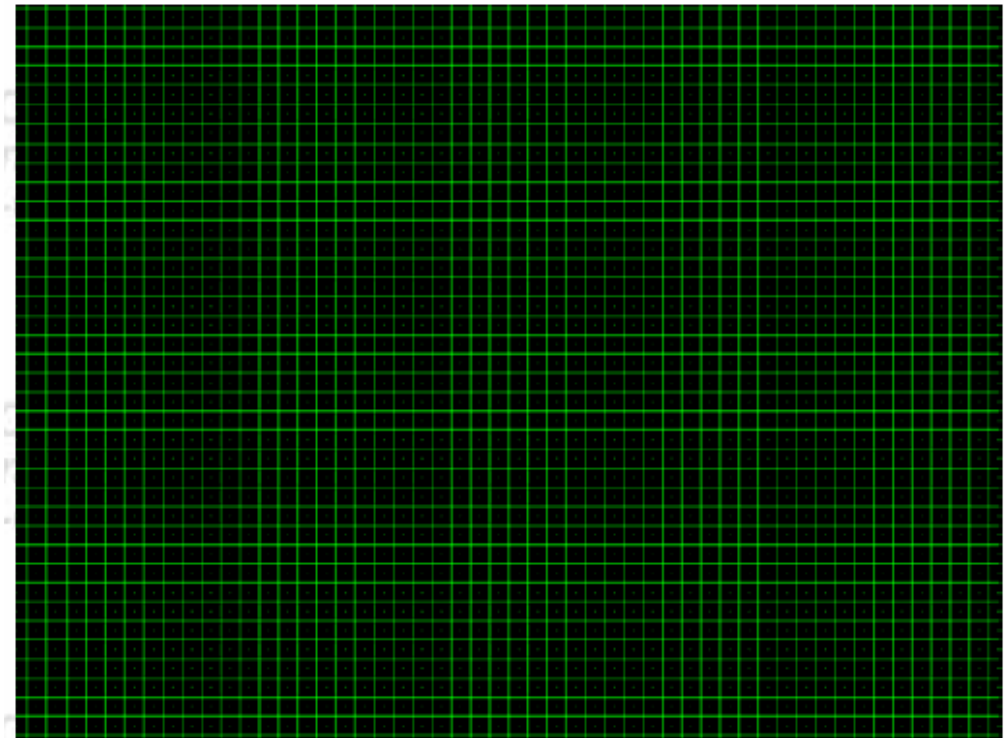
Pattern 1 (Please contact BenQ RD for file with correct resolution)

Pattern 2 (Please contact BenQ RD for file with correct resolution)

Pattern 3 (Please contact BenQ RD for file with correct resolution)

Pattern 4 (Please contact BenQ RD for file with correct resolution)
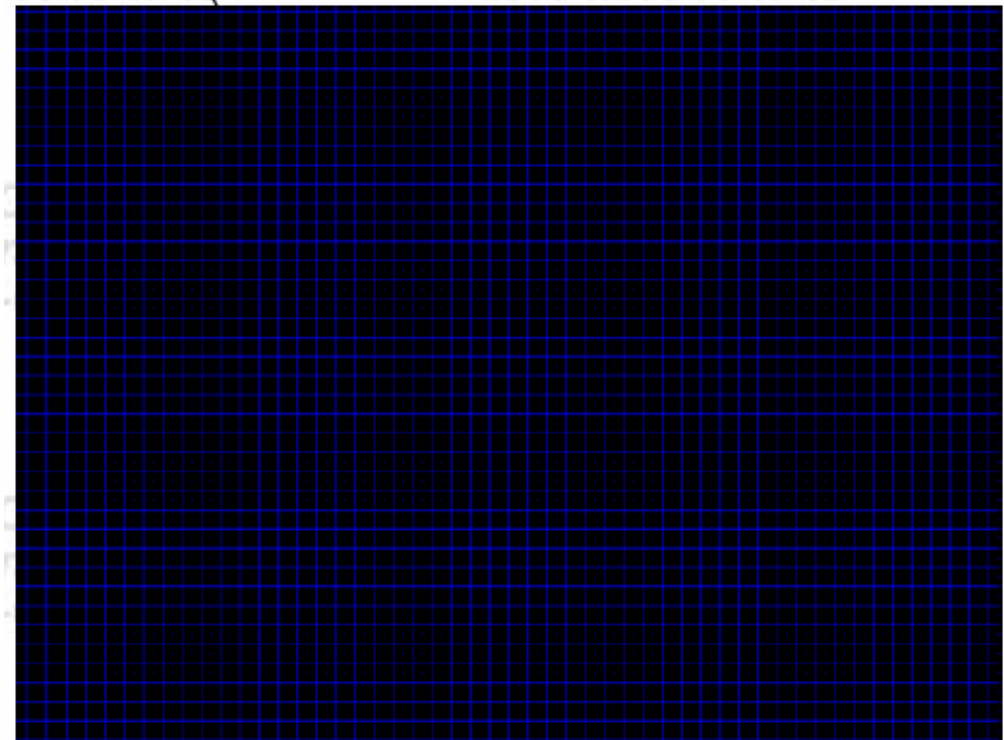
Pattern 5 (Please contact BenQ RD for file with correct resolution)
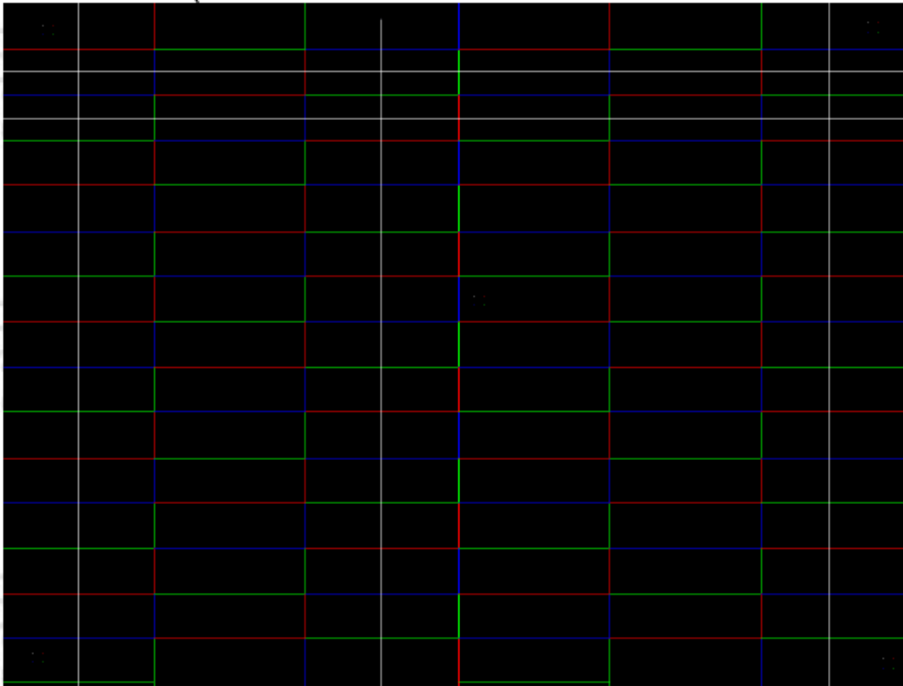
Chart 1 Example of Pixel Testing Pattern (60" screen size)
(Please contact BenQ RD for file with correct size)
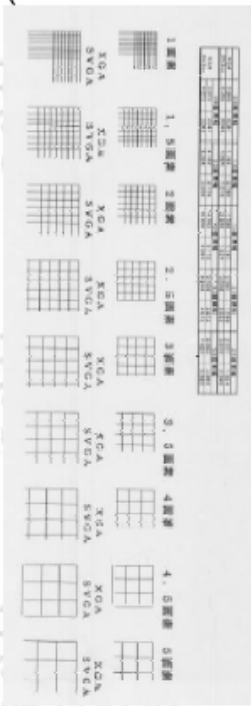
Chapter 2: Spare Parts List

PB8250 Spare Parts List		
Item No.	Sales Location	Notes
99.J8177.B81		PB8250
99.J8177.B8K	Korea	PB8250
99.J8177.B8T	Taiwan	PB8250

NO.	PART NO.	DESCRIPTION	Location
1	22.91008.001	SKT PLUG 2/3P W/G PSE	
2	23.10035.011	FAN 12V 60*60*25 GB1206PTV2-A	
3	23.10035.051	FAN 12V 60*60*25 GB1206PTV3-A	
4	23.10090.021	FAN 12V50*50*20 80M GB1205PKV	
5	23.10107.021	FAN DC12V 60*15 70MM AD0612XB	
6	23.10110.011	FAN 12V 80*80*25/92*25 SUNON	
7	27.01018.000	CORD H05VV-F13A250V 1830MM UK	UK
8	27.01818.000	CORD SVT#18*3C10A125V 1830US	US
9	27.82718.281	CORD H05VV-F 10A250V EUR BLK	EU
10	31.J9401.011	NAME PLATE AL PB8250	
11	42.J9406.001	REAR/C PC Y5003A PB8240	
12	44.J7601.003	CTN AB PB7100/BENQ(VI)	
13	47.J8104.001	BAG CARRY PB8250/8240/8140	
14	50.72920.011	C.A MIN-DIN 4P S-VIDEO W/S 15	
15	50.73213.501	CABLE 4P USB A-B 1800MM BLACK	
16	50.J0508.503	SIGNAL/C 15/15P 20276 1800MM	
17	50.J2103.501	CABLE RGA/DVI-A (WHDDC) 1.8M	
18	50.J2401.001	CABLE D-SUB/RCA 1800MM/SL705X	
19	50.L4302.501	CABLE AUDIO 284C/577C+CORE BL	
20	54.J9412.001	BALLAST 300W O4 PB8250 OSRAM	
21	55.J1313.001	PCBA 1L SENSOR-B BD SL700 X M	
22	55.J5019.001	PCBA THERMAL BD DX850	
23	55.J9401.001	PCBA MAIN BD PB8260	
24	55.J9405.001	PCBA DC-DC BD PB8260	
25	55.J9410.001	PCBA CONNECTOR BD PB8260	
26	55.J9412.001	PCBA KEYPAD BD PB8240	
27	55.J9423.001	PCBA CHIP BD PB8240	
28	55.J9428.001	PCBA REAR IR BD PB8260	

29	56.26J95.001	REMOTE PB8250 FORWARD	
30	60.J8115.001	ASSY POWER+BRIDGE BD PB8250	
31	60.J9418.001	ASSY SUB U/C PB8240	
32	60.J9420.001	ASSY SUB L/C PB8240	
33	60.J9420.002	ASSY SUB LOWER CASE PB8240	
34	65.J7603.111	CW DIA46 DEG110 PB2240 PRODIS	
35	65.J9301.001	PL ZOOM PB8240 COSINA	
36	71.07XGA.B01	IC DMD 0.7XGA DDR 12 FTP PIXE	
37	59.J8101.CG1	Service lamp	
38	60.J9428.001	ASSY CD+MANUAL PB8250	

Chapter 3: Product description and operation

Shipping Contents

The projector is shipped with the cables required for connection to a PC and to video equipment. Carefully unpack and verify that you have all of the items shown below. If any of these items are missing, please contact your place of purchase.

Projector	Soft Carry Case	User's Manual

Batteries	3-2 Power Converter	User's Manual CD	Quick Start Guide	Warranty Booklet

Remote Control	S-Video Cable	Video Cable	VGA Cable	Audio Cables

USB Cable	D-Sub - DVI Cable	Power Cord 110V	Power Cord 220V	Power Cord 240V

Component Video Cable

Optional Accessories

1. Macintosh adapter
2. 250W / 300W lamp module
3. Ceiling mount kit
4. Wireless Pro
5. Presentation Pro
6. DVI-I cable

Projector Description

Front / Upper View

- External control panel (See page 9 for detailed information.)
- Projection lens adjuster
- Projection lens
- Front adjuster button
- Front IR remote sensor
- Kensington lock slot
- AC power inlet
- Main power switch
- Air filter grill (See page 36 for detailed information.)
- Front adjuster button

Back View

- Ventilation grill
- Back IR remote sensor
- Connector panel (See page 8 for more information.)
- Rear adjuster

Bottom View

Lamp door

Front adjuster

Front adjuster

Rear adjuster

Rear adjuster

Connector Panel

S-Video jack

D-Sub/Comp. In

DVI-I

RGB signal input
(PC/ YPbPr/ YCbCr)

DVI-I connector

S-Video

RS 232

D-Sub Out

RGB signal output

RS 232 control port
For external control
systems and used by
service personnel.

R   L   Video

USB

PC Audio

Audio/ Video
connector

PC Audio jack

USB connector

Controls and Functions

External Control Panel

1. **Power** (Refer to page 18 for more information.)

   Turns the projector on or off.

2. **Source** (Refer to page 21 for more information.)

   Sequentially selects the input signal RGB, DVI, YPbPr, S-Video or Video.

3. ◄ **Left**

4. **Right** ►

   When the on-screen menu is not activated, #3 and #4 function as **Keystone -/+** hot keys.

   Refer to page 20 for more information.

5. ▲ **Exit**

   Exits and saves the menu settings.

6. ▼ **Menu**

   Turns the on-screen display control menu on.

   When the on-screen menu is activated, the #3 to #6 buttons are used as directional arrows to select the desired menu items and to make adjustments. Refer to page 26 for more information.

7. **Auto** (Refer to page 21 for more information.)

   Automatically determines the best picture timings for the displayed image.

8. **Blank** (Refer to page 22 for more information.)

   Used to hide the screen image. You can press **Blank** again or **Return** to bring the image back.

9. **Power indicator light**

   Lights up or flashes when the projector is under operation.

10. **Temperature warning light** (Refer to page 40 for more information.)

    Flashes red if the projector's temperature becomes too high.

11. **Lamp indicator light** (Refer to page 38 for more information.)

    Indicates the status of the lamp. Lights up or flashes when the lamp has developed a problem.

12. **Zoom ring**

    Adjusts the size of the image.

13. **Focus ring**

    Adjusts the focus of the projected image.

Remote Control Description

Front View

LED (22)   Source (21)

Power (18, 19)   Laser Pointer (22)

▼ Down/ ▯ Menu (26)   Exit (26)

◀ Left/ Keystone -
▶ Right/ Keystone + (20)

Auto (21)   Blank (22)

L-Click/ R-click (23)   Mouse Pad (23)

Drag (23)

Zoom in +/ Zoom out - (23)   Volume +/- (23)

Return (23, 24)   Mute (23)

PIP Position (23)   PIP Size (23)
PIP Source (23)

Freeze (24)   Preset (34)
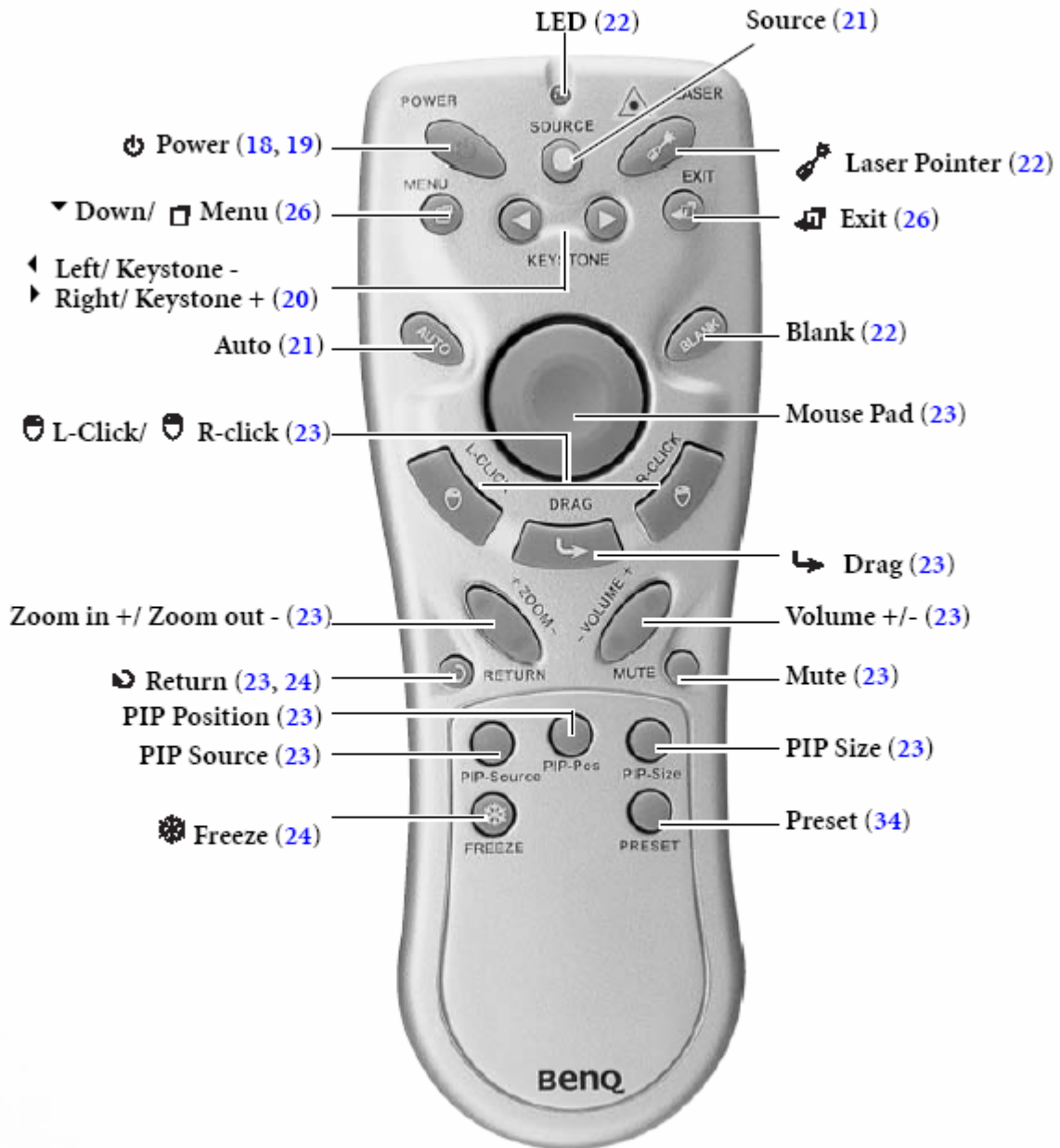
Notes on Remote Control Operation

Make sure that there are no obstacles between the remote control and the IR sensors on the projector that might obstruct the infra-red beam.

Remote Control Effective Range

Infra Red (IR) remote control sensors are located on the front and the back of the projector. The remote control must be held at an angle within 30 degrees of the projector's IR remote control sensors to function correctly. The distance between the remote control and the sensors should not exceed 6 meters (19.5 feet).
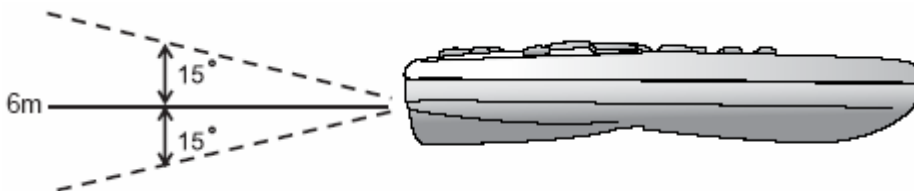
Warning Messages on the Back of the Remote Control

⚠ The laser beam is visible. It is necessary to depress the Laser button for continuous output.

⚠ The laser pointer is not a toy. Parents should be mindful of the dangers of laser energy and keep this remote control out of the reach of children.
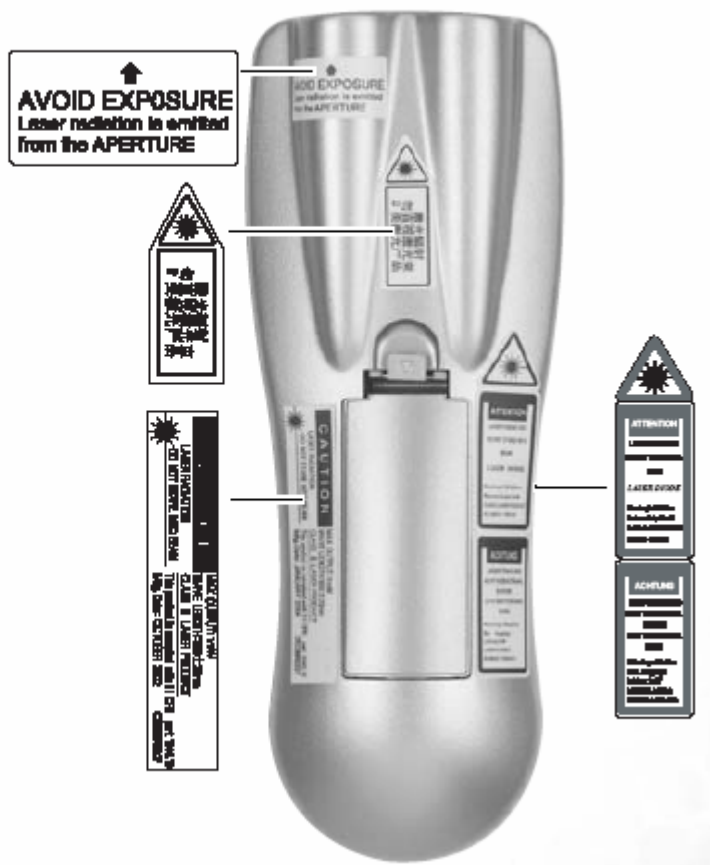
Installing or Replacing the Batteries

❶ Push and open the battery compartment lid in the direction shown.

❷ Install batteries as indicated by the diagram inside the compartment.

❸ Position the lid over the compartment and snap it back into place.

⚠ Avoid excessive heat and humidity. There may be danger of an explosion if the batteries are incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of the used batteries according to the manufacturer's instructions.

Installation

Choosing a Location

Your projector is designed to be installed in the four installation configurations shown here: Floor front, Ceiling front, Floor rear, Ceiling rear. Your room layout or personal preference will dictate which installation configuration you use.

I. Floor front
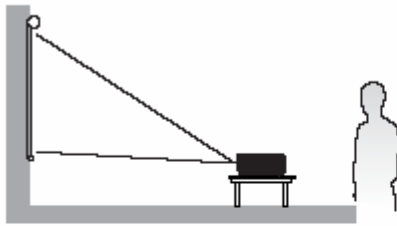
II. Ceiling front
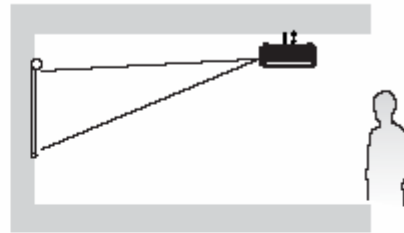
III. Floor rear
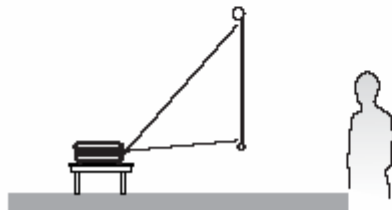
IV. Ceiling rear
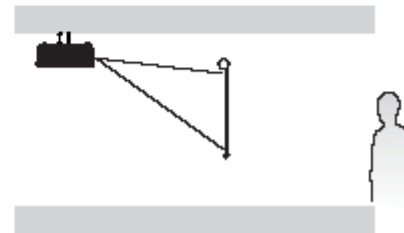
If you place the projector above or below the screen, you have to tile it down or up to center the image on the screen, in these situations image distortion will occur. Use the Keystone function to correct the distortion. See keystone correction.

Making Connections

When connecting a signal source to the projector, be sure to:

1. Turn all equipment off before making any connections.
2. Use the correct signal cables for each source.
3. Ensure the cables are firmly inserted.

Connecting to a Laptop or Desktop Computer
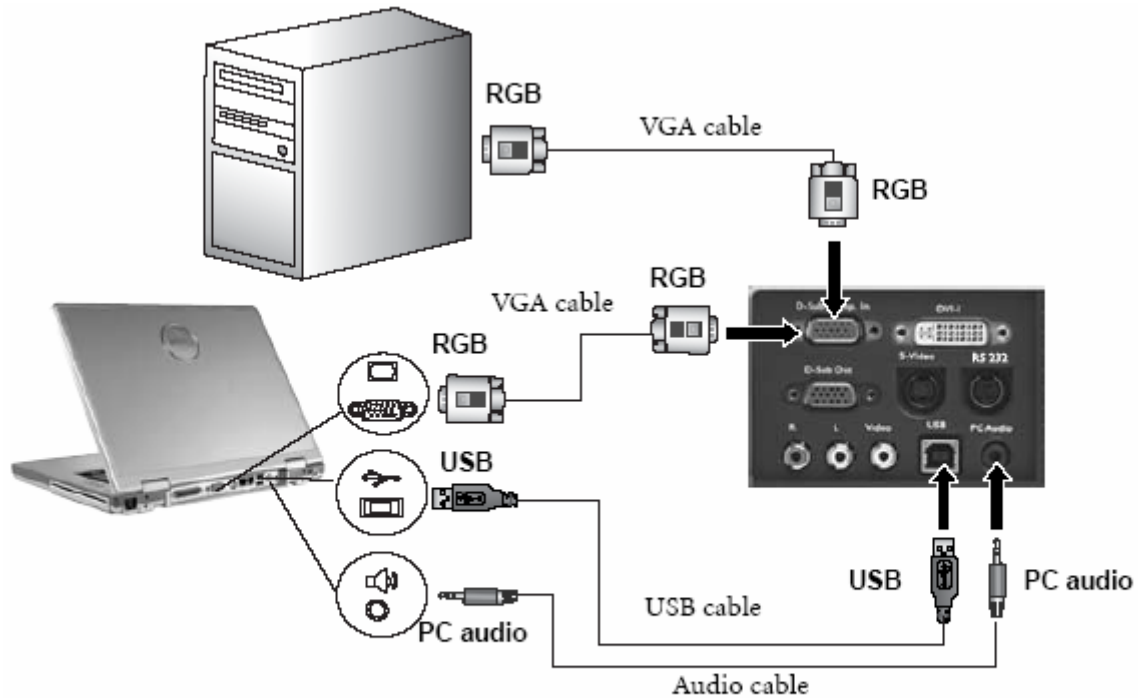
☞ A Mac adapter (an optional accessory) may be necessary if you are connecting to an older Macintosh computers.

The USB cable is required if you intend using mouse functions on the remote control.

Connecting Equipment to the Component Video Input
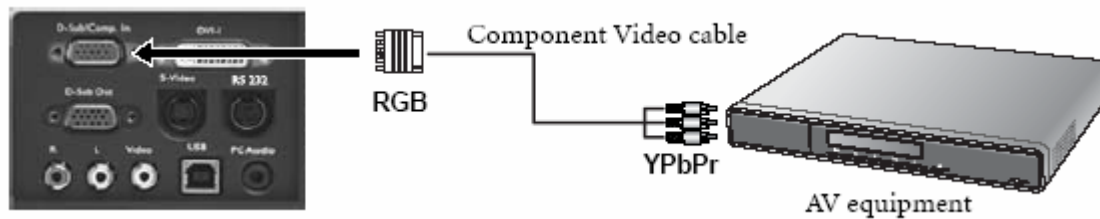
The projector is capable of displaying various High Definition TV display modes. Some of these sources are:

- Digital-VHS (D-VHS) player
- Satellite Dish HDTV receiver
- DVD player
- Digital TV tuners

Most of these sources will provide an analog component video output, a standard VGA output, or a YPbPr (default) format.

The projector is capable of accepting HDTV data through a Component Video connector. Use a Component Video cable that came with your projector to display these images.

The following standards are supported in the HDTV function:

- 480i
- 576i
- 720p (50/ 60 Hz)

- 480p
- 576p
- 1080i (50/ 60 Hz)

Connecting to Video or S-Video Devices
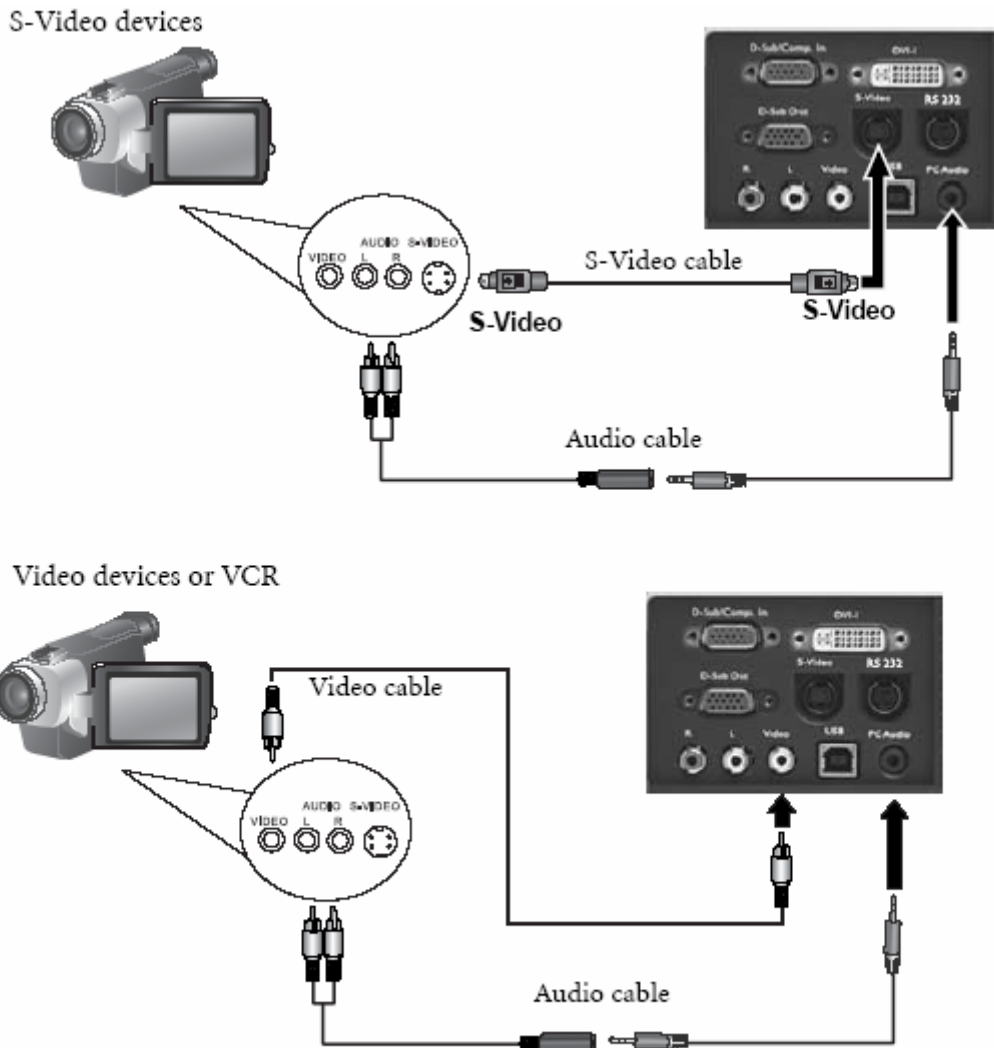
☞ If the selected video image is not displayed after the projector is turned on and the correct video source has been selected, check that the video source is turned on and operating correctly. Also check that the signal cables have been connected correctly.

Connecting to Display Devices

If you want to monitor your presentation close-up on a monitor as well as on the screen, you can connect the RGB signal output port on the projector to an external monitor with a VGA cable or D-Sub - DVI cable.

VGA cable or D-Sub - DVI cable
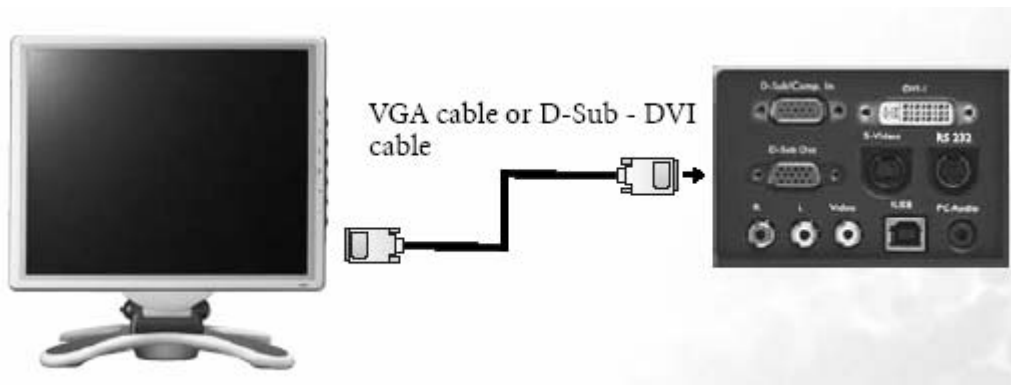
Adjusting the Height

The projector is equipped with 2 quick-release adjuster feet.

1. Lift the projector up and press the adjuster button to release the adjuster. The adjuster will drop into position and be locked.

2. Screw the rear adjuster feet to fine-tune the projection angle.

☞ If the screen and the projector are not perpendicular to each other, the projected image becomes vertically trapezoidal. To correct this situation, adjust the value of Keystone in the Display menu, on the projector control panel or on the remote control.

Screen Size

Place the projector at the required distance from the screen according to the required picture size (see the table on the next page).
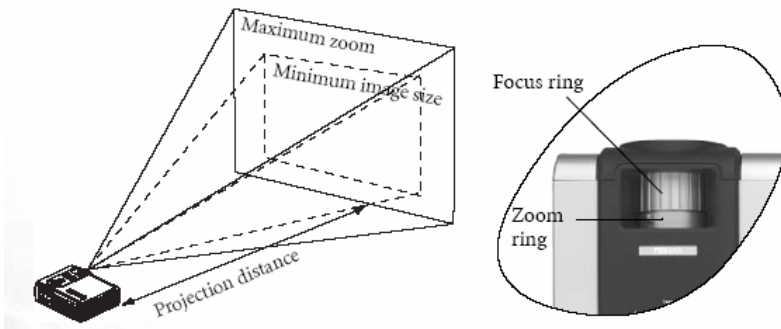
Screen size chart (4:3 aspect ratio)

Distance from screen		Diagonal measurement				Distance from screen		Diagonal measurement			
		Minimum zoom		Maximum zoom				Minimum zoom		Maximum zoom	
feet	inch	feet	inch	feet	inch	meter	cm	meter	cm	meter	cm
4	48	2.49	29.9	3.05	36.6	1	100	0.62	62.2	0.76	76.2
6	72	3.73	44.8	4.57	54.9	1.5	150	0.93	93.3	1.14	114.3
8	96	4.98	59.7	6.10	73.2	2	200	1.24	124.5	1.52	152.4
10	120	6.22	74.7	7.62	91.4	2.5	250	1.56	155.6	1.91	190.5
12	144	7.47	89.6	9.14	109.7	3	300	1.87	186.7	2.29	228.6
14	168	8.71	104.5	10.67	128.0	3.5	350	2.18	217.8	2.67	266.7
16	192	9.96	119.5	12.19	146.3	4	400	2.49	248.9	3.05	304.8
18	216	11.20	134.4	13.72	164.6	4.5	450	2.80	280.0	3.43	342.9
20	240	12.45	149.4	15.24	182.9	5	500	3.11	311.2	3.81	381.0
22	264	13.69	164.3	16.76	201.2	5.5	550	3.42	342.3	4.19	419.1
24	288	14.94	179.2	18.29	219.5	6	600	3.73	373.4	4.57	457.2
26	312	16.18	194.2	19.81	237.7	6.5	650	4.04	404.5	4.95	495.3
28	336	17.42	209.1	21.34	256.0	7	700	4.36	435.6	5.33	533.4
30	360	18.67	224.0	22.86	274.3	7.5	750	4.67	466.7	5.72	571.5
32	384	19.91	239.0	24.38	292.6	8	800	4.98	497.8	6.10	609.6
34	408	21.16	253.9	25.91	310.9	8.5	850	5.40	539.8	6.48	647.7

Screen size chart (16:9 aspect ratio)

Distance from screen		Diagonal measurement				Distance from screen		Diagonal measurement			
		Minimum zoom		Maximum zoom				Minimum zoom		Maximum zoom	
feet	inch	feet	inch	feet	inch	meter	cm	meter	cm	meter	cm
4	48	2.29	27.5	2.80	33.6	1	100	0.57	57.4	0.70	70.0
6	72	3.44	41.3	4.20	50.4	1.5	150	0.86	86.0	1.05	105.0
8	96	4.59	55.1	5.60	67.2	2	200	1.15	114.7	1.40	140.0
10	120	5.74	68.8	7.00	84.0	2.5	250	1.43	143.4	1.75	179.4
12	144	6.88	82.6	8.40	100.8	3	300	1.72	172.1	2.10	209.9
14	168	8.03	96.4	9.80	117.6	3.5	350	2.01	200.8	2.45	244.9
16	192	9.18	110.1	11.20	134.4	4	400	2.29	229.4	2.80	279.9
18	216	10.32	123.9	12.60	151.2	4.5	450	2.58	258.1	3.15	314.9
20	240	11.47	137.7	14.00	167.9	5	500	2.87	286.8	3.50	349.9
22	264	12.62	151.4	15.39	184.7	5.5	550	3.15	315.5	3.85	384.9
24	288	13.77	165.2	16.79	201.5	6	600	3.44	344.1	4.20	419.9
26	312	14.91	179.0	18.19	218.3	6.5	650	3.37	372.8	4.55	454.9
28	336	16.06	192.7	19.59	235.1	7	700	4.02	401.5	4.90	489.8
30	360	17.21	206.5	20.99	251.9	7.5	750	4.30	430.2	5.25	524.8
32	384	18.35	220.3	22.39	268.7	8	800	4.59	458.9	5.60	559.8

There is 3% ~ 5% tolerance among these numbers due to optical component variations.

* 1m = 3.28 feet, 1 feet = 0.305m,   1m = 100cm,   1 feet = 12 inches

Operation

Start Up

1. Switch all of the connected equipment on.
2. Plug the power cord into the projector and into a wall socket.
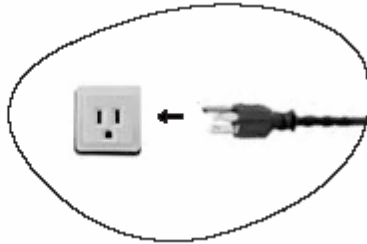
3. Turn on the wall socket switch (where fitted).
4. Turn the main power switch on. The Power indicator lights orange.
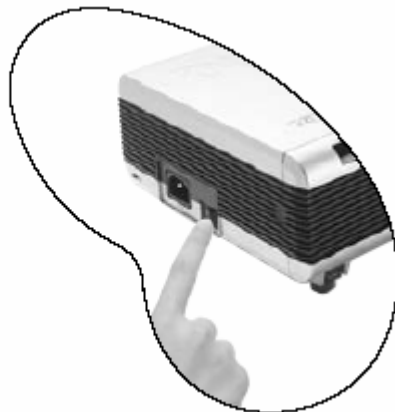
5. Press and hold Power on the remote control or projector to start the unit. The Power indicator light flashes green when the power is turned on.

6. The start up procedure takes about 30 seconds after pressing Power. In the later stage of start up, a default BenQ logo appears.

7. Next, the projector starts to search input signals. Irrespective of selected input source, the screen shows "**Acquiring Signal**" at the bottom right corner of the screen. If there is no input source detected, one of six messages will be displayed on the screen continuously: "Analog RGB Searching", "DVI-A Searching", "DVI-D Searching", "Analog YPbPr Searching", "S-Video Searching", and "Composite Video Searching".

8. You can also press Source on the projector or remote control to select your desired input signal.

Digital Keystone Correction

Keystoning refers to the situation where the projected image is noticeably wider at either the top or bottom. It occurs when the projector is not perpendicular to the screen.

To correct this, besides adjusting the height of the projector, you will need to manually correct it following ONE of these steps.

1. Press ◀ **Left/ Right** ▶ (hot key) on the control panel of the projector to display the status bar labelled Keystone. Press **Right** ▶ to correct keystoning at the top of the image. Press ◀ **Left** to correct keystoning at the bottom of the image.

2. Press ◀ **Keystone/ Keystone** ▶ on the remote control to display the status bar labelled Keystone. Press **Keystone** ▶ to correct keystoning at the top of the image. Press ◀ **Keystone** to correct keystoning at the bottom of the image.
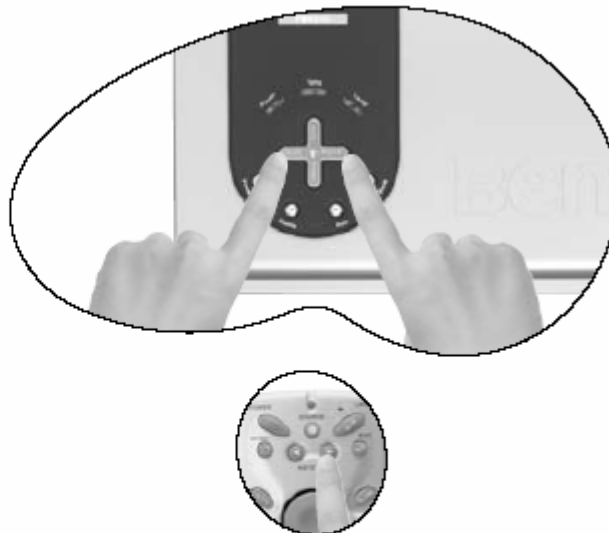
3. Press **Menu** key on the projector or the remote control. Go to [image] **Display --> Keystone** and adjust the values by pressing ◀ **Left/ Right** ▶ on the projector or ◀ **Keystone/ Key-stone** ▶ on the remote control.

For example,

1. Press Right ▶ on the projector or
2. Press Keystone ▶ on the remote control or
3. Press ▶ Right on the projector or Keystone ▶ on the remote control when you are in Display --> Keystone menu.

1. Press ◀ Left on the projector or
2. Press ◀ Keystone on the remote control or
3. Press ◀ Left on the projector or ◀ Keystone on the remote control when you are in Picture --> Keystone menu.

Source Selection

To sequentially select input sources, press **Source** on the projector control panel or the remote control. It may take you a few seconds when the projector is searching for input signals. The selected source will be displayed at the bottom right of the screen for 3 seconds.
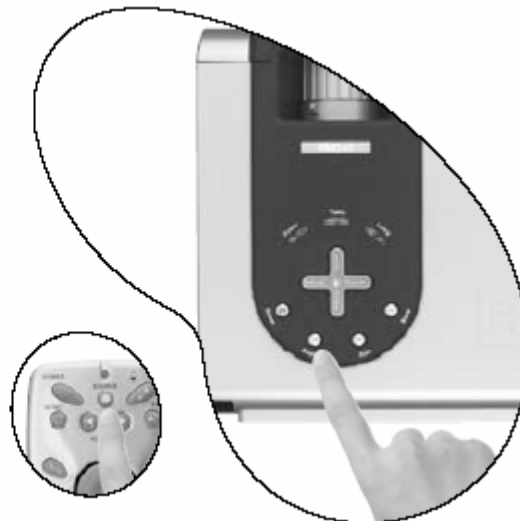
Auto Adjustment

In some cases, you may need to optimize the picture quality. To do this, press **Auto** on the control panel of the projector or on the remote control. Within 3 seconds, the built-in Intelligent Auto Adjustment function will re-adjust the values of Frequency and Clock to provide the best picture quality.

The current source information will be displayed at the bottom right of the screen for 3 seconds, as below.

> Analog RGB
>
> 1280 x 854 / 60Hz
>
> Presentation Mode
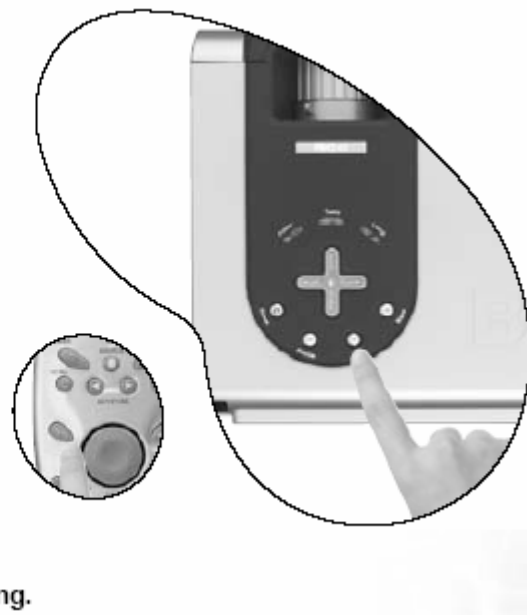
☞ The screen will be blank while Auto is functioning.

Blank

In order to draw the audience's full attention to the presenter, you can use **Blank** to hide the screen image. Press **Blank** again to restore the image. A word "**BLANK**" appear at the bottom right corner of the screen when the image is hidden.

BLANK

Zoom / Focusing

Adjust the projected image to your desired size using the lens' zoom ring. Then focus the image by rotating the focus ring.

Focus ring

Zoom ring
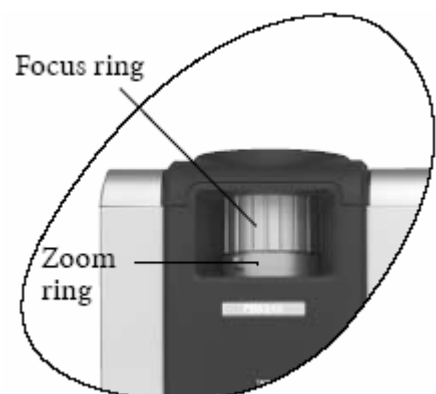
Laser Pointer Operation

The Laser Pointer is a presentation aid for professionals. It emits red colored light when you press it and the LED indicator lights up green. Do not look into the laser light window or shine the laser light beam on yourself or others. Refer to the warning messages on the back of the remote control and the attached "User Information" prior to using it.
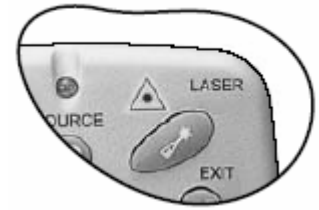
Mouse Function Operation

Connect the projector to your PC or notebook with a USB cable prior to using these functions. The Mouse Pad can take over the PC or notebook mouse function. When the displayed image is magnified, use the Mouse Pad to move around the display areas.

The L-Click and R-Click act as the Left (L) and Right (R) buttons of a computer mouse.

The Drag toggles between ON and OFF for the drag function of the remote mouse.

Zoom In + / Zoom Out -

By pressing Zoom +, the center of the picture will be magnified. When the + button is pressed again, the picture is further magnified. Use the Mouse Pad to navigate the image. By pressing Zoom -, the size of the image is reduced. When the - button is pressed again, the picture is further reduced until it is restored to the original size. You can also restore the actual image size by pressing Return.

Volume Adjustment

Adjust the loudness by pressing Volume + / - . Or press Mute to mute the sound.

PIP (Picture In Picture) Operation

By pressing the PIP-Source, PIP-Pos and PIP-Size hot keys, you can enable the PIP (Picture In Picture) function and choose the position and size of the PIP image.

Freeze

The image is frozen when **Freeze** is pressed. An icon ▌▌ will appear in the lower right corner of the screen. To release the function, press **Freeze** again, **Return** or **Source** (this will change the input source and release the pause function).

Preset Mode Selection

Press **Preset** to select a operation mode that suits your need. There are several operation modes available for different types of signals.

PC / DVI Signal Input			
Presentation	Vivid	Video	Economic
YPbPr / S-Video / Video Signal Input			
Gaming	Video	Cinema	Economic
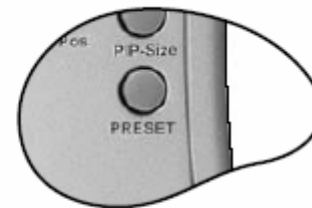
Menu Operation

Menu System

Please note that the OSD menus vary according to the signal type selected.

Sub-Menu	Functions available when receiving different signal types...			
	Analog RGB / DVI-A	DVI-D	YPbPr (480p/ 576p/ 720p/ 1080i)	YCbCr (480i/ 576i) / S-Video / Video
Display	Keystone Brightness Contrast Phase H Size Lamp Hour	Keystone Brightness Contrast Lamp Hour	Keystone Brightness Contrast Phase H Size Lamp Hour	Keystone Brightness Contrast Color Tint Lamp Hour
Image	Auto Resize H Position V Position Color Temp Information	Auto Resize Color Temp Information	Ratio H Position V Position Color Tint Color Temp	Ratio System Sharpness Color Temp Information
Source	Mirror Source Volume Treble Bass Mute			
Control	Language OSD -- OSD Pos., OSD Time Setup -- Source Scan, Keystone Hold, Mirror Hold, Blank Time, Auto Off, User Logo Economic Mode Preset Mode -- (PC/ DVI signal input only) Presentation Mode, Vivid Mode, Video Mode, Economic Mode (YPbPr/ YCbCr/ S-Video/ Video signal input) Gaming Mode, Video Mode, Cinema Mode, Economic Mode Reset High Altitude			
PIP	**Main Page:** PIP Source PIP Size PIP Pos. H Position V Position More Options		**Sub Page:** Brightness Contrast Color Tint Sharpness System	

Using the menus

The projector is equipped with on-screen display (OSD) menus for making various adjustments and settings. There are 10 different menu languages. The following example describes the adjustment of the keystone.

1. Press **Menu** on the projector or remote control to turn the on-screen menu on.
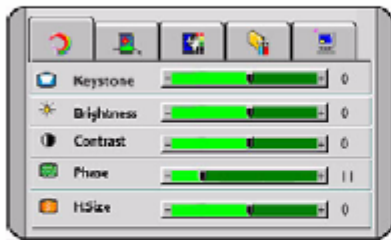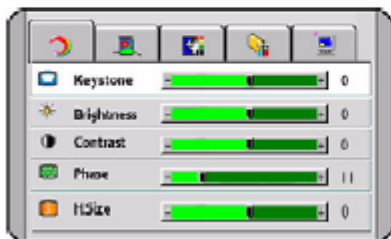
4. Adjust keystone values by pressing ◀ **Left/ Right** ▶ on the projector or ◀ **Keystone/ Keystone** ▶ on the remote control.

2. Use ◀ **Left/ Right** ▶ on the projector or ◀ **Keystone/ Keystone** ▶ on the remote control to select **Display** menu.

3. Use ▲ **Exit** or ▼ **Menu** on the projector or ▼ **Down/** ⬜ **Menu** on the remote control to select **Keystone**.

5. Press ▲ **Exit** on the projector or press ⬜ **Exit** twice* on the remote control to leave and save the settings.

*The first press leads you back to the submenu and the second press closes the on-screen menu.

1. Display Menu

Analog RGB/ DVI-A/ YPbPr (480p, 576p, 720p, 1080i) signal input

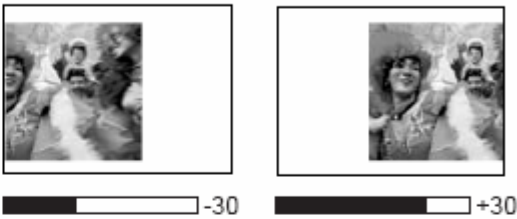| FUNCTION	DESCRIPTION
Keystone	Corrects any keystoning of the image. Refer to page 20 for more information.
Brightness	Adjusts the brightness of the image. The higher the value, the brighter the image. And lower the setting, darker the image. Adjust this control so the black areas of the image appear just as black and that detail in the dark areas is visible. -25 0 +25
Contrast	Adjusts the degree of difference between dark and light in the image. The higher the value, the greater the contrast. -25 0 +25
Phase	This function allows you to adjust the clock phase to reduce image distortion.
H Size	Adjusts the horizontal width of the image.
Lamp Hour	Displays the number of hours the lamp has been used.

DVI-D signal input

FUNCTION	DESCRIPTION
Keystone	As above.
Brightness	As above.
Contrast	As above.
Lamp Hour	As above.

YCbCr (480i, 576i)/ S-Video/ Video signal input

FUNCTION	DESCRIPTION
Keystone	As above.
Brightness	As above.
Contrast	As above.
Color	Increases or decreases the color intensity of the image.
Tint	Adjusts the color tones of the image. The higher the value, the more reddish the image becomes. The lower the value, the more greenish the image becomes.
Lamp Hour	As above.

2. Image Menu

Analog RGB/ DVI-A signal input

FUNCTION	DESCRIPTION
Auto Resize	Makes the best fit of the image to the screen, 1. On 2. Off 3. 16:9
H Position	Adjusts the horizontal position of the projected image.
V Position	Adjusts the vertical position of the projected image.
Color Temp	Adjusts the white color. The higher the value, the more reddish white the image becomes. The lower the value, the more bluish white the image becomes.*
Information	Shows the current image resolution.

*About color temperatures:

There are many different shades that are considered to be "white" for various purposes. One of the common methods of representing white color is known as the "color temperature". A white color with a low color temperature appears to be reddish white. A white color with a high color temperature appears to have more blue in it.

DVI-D signal input

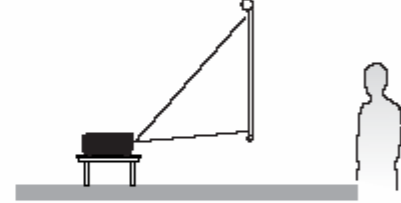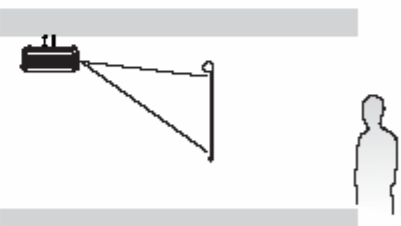| FUNCTION	DESCRIPTION
Auto Resize	As above.
Color Temp	As above.
Information	As above.
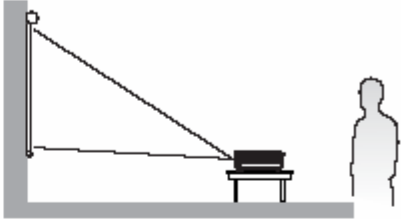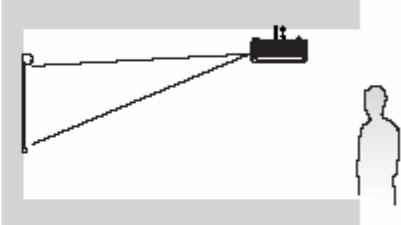
YPbPr (480p, 576p, 720p, 1080i) signal input

FUNCTION	DESCRIPTION
Ratio	Users have 2 options for the image ratio. 1. 4 : 3 2. 16 : 9
H Position	As above.
V Position	As above.
Color	Increases or decreases the color intensity of the image.
Tint	Adjusts the color tones of the image. The higher the value, the more reddish the image becomes. The lower the value, the more greenish the image becomes.
Color Temp	As above.

YCbCr (480i, 576i)/ S-Video/ Video signal input

FUNCTION	DESCRIPTION
Ratio	As above.
System	Shows the Video input system format, 1.NTSC 2. PAL 3.SECAM 4. YUV.
Sharpness	Adjusts the image to make it look sharper or softer.
Color Temp	As above.
Information	As above.

3. Source Menu

FUNCTION	DESCRIPTION
Mirror	The projector can be installed on a ceiling or behind a screen, or with one or more mirrors. Contact your dealer for the ceiling mount bracket (optional accessory) if you need to install the projector on your ceiling. • Floor front: Select this setting with the projector set on the floor and audience viewing the projected images from the front side of the screen. This is the most common setting. • Ceiling front: Select this setting with the projector suspended from the ceiling and audience viewing the projected images from the front side. • Floor rear: Select this setting when the projector is placed near the floor and behind the screen. A special rear projection screen is required. • Ceiling rear: Select this setting when the projector is suspended from the ceiling and placed behind the screen. A special rear projection screen is required.
Source	Shows the current signal source.
Volume	Adjusts the volume level.
Treble	Adjusts the treble level. (-5 ~ 5)

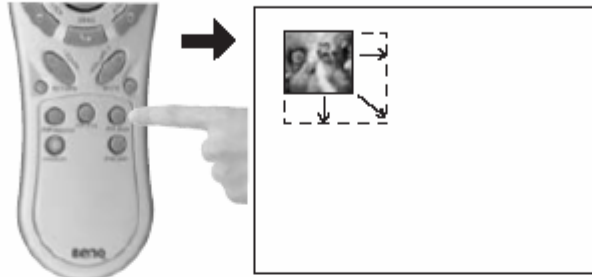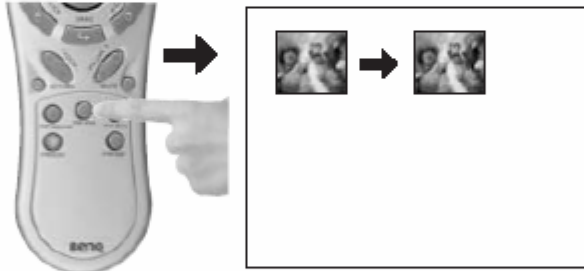|	
Bass	Adjusts the bass level. (-5 ~ 5)
Mute	Off On

4. Control Menu

FUNCTION	DESCRIPTION
Language	Language sets the language for the OSD control menus. Use the ◀ / ▶ key to select the desired language from among English, French, German, Italian, Spanish, Russian, Traditional Chinese, Simplified Chinese, Japanese and Korean.
OSD	**OSD Pos.** Selects a desired OSD position.
	OSD Time Sets the length of time the OSD will remain active after your last button press. The range is from 5 to 60 seconds.
Setup	**Source Scan** Sets whether the projector searches automatically for input signals. If the source scan is on, the projector will search for input signals in the following order: Analog RGB --> DVI-A --> DVI-D --> Analog YPbPr --> S-Video --> Composite Video until it acquires a signal. If the function is not activated, the projector selects the last input signal.
	Keystone Hold When selected, preserves the last keystone correction value even when the projector is restarted.
	Mirror Hold When selected, preserves the last mirror correction value even when the projector is restarted.
	Blank Time Determines the length of time before the projector will automatically shutdown when Blank is activated.
	Auto Off Sets the length of time before the projector will automatically shutdown when there is no input signal detected.
	User Logo Enables the user to select which logo screen will appear during projector start-up. Three modes are available: Default (BenQ logo), black screen or blue screen.

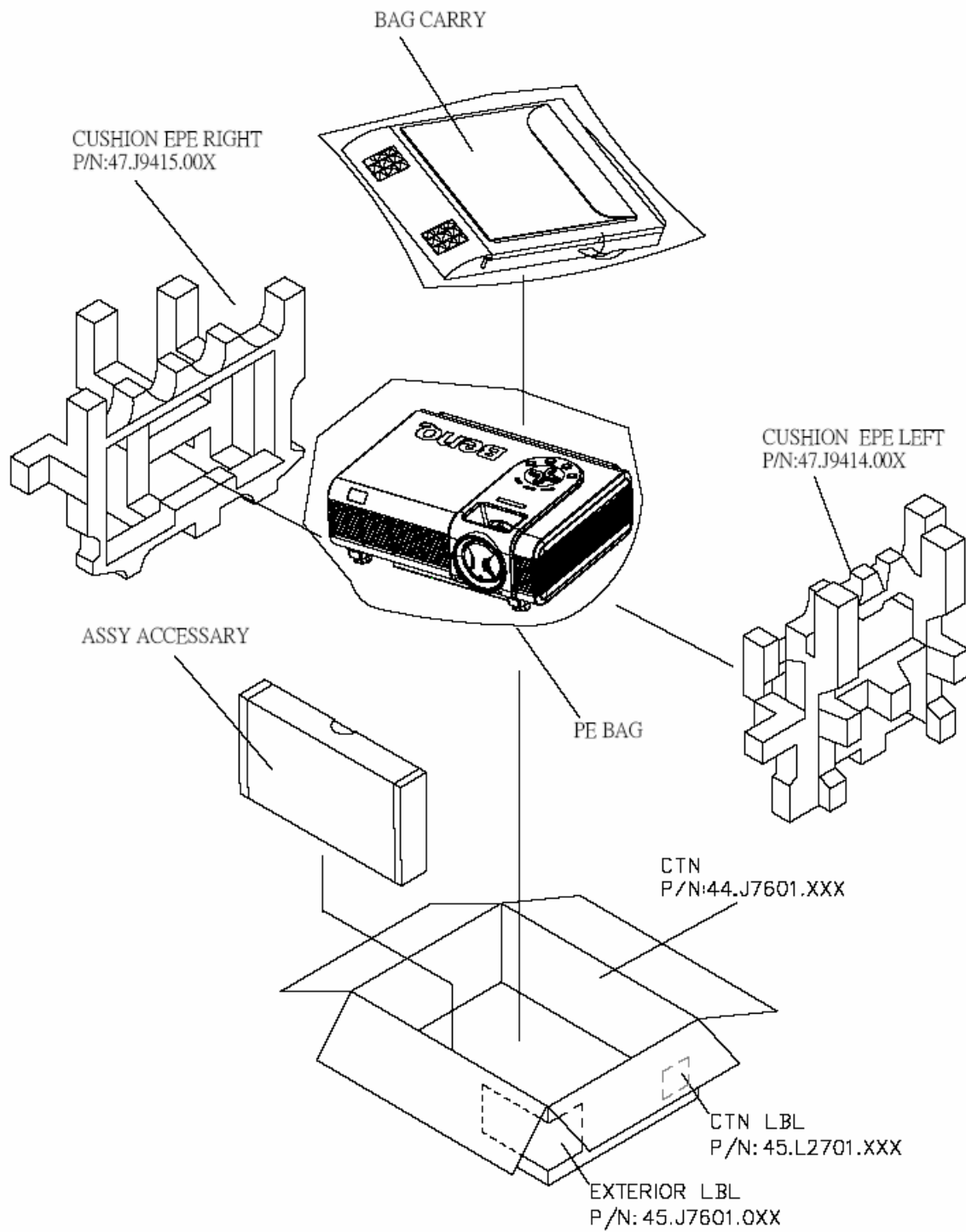|	
Preset Mode	Preset modes are provided so you can optimize your projector image set-up to suit your program type. **PC/ DVI Signal input** 1. **Presentation Mode:** Is designed for presentations. The brightness is emphasized in this mode. 2. **Vivid Mode:** Is perfect for playing games. The color saturation and brightness are well-balanced. 3. **Video Mode:** Is suitable for cinematic enjoyment displaying images in their natural color. 4. **Economic Mode:** Use this mode to reduce the system noise and reduce the power consumption by 20%. The lamp life is also extended with lower light output. **YPbPr/ YCbCr/ S-Video/ Video Signal Input** 1. **Gaming Mode:** Is suitable for playing video games in a bright living room. 2. **Video Mode:** With a higher color temperature, it is suitable for enjoying TV movies. 3. **Cinema Mode:** With a lower color temperature, it is suitable for enjoying cinematic movies. 4. **Economic Mode:** Use this mode to reduce the system noise and reduce the power consumption by 20%. The lamp life is also extended with lower light output.
Reset	Returns all settings to the factory preset values.
High Altitude	A mode for extreme environments like high altitude and high temperature. We recommend you use the High Altitude mode when your environment is higher than 3000 feet, or is hotter than 40°C. Operation under "High Altitude Mode" may cause a higher decibel operating noise level because of increased fan speed necessary to improve overall system cooling and performance. If you use this projector under other extreme environments excluding the above, it may display auto shut-down symptoms, which is designed to protect your BenQ projector from over-heating. In cases like this, you should switch to High Altitude mode to solve these symptoms. However, this is not to state that this projector can operate under any and all harsh or extreme environments.

5. PIP (Picture In Picture) Menu

Your projector is capable of displaying images simultaneously from two input sources, which enhances your presentation in a more effective way.

These functions are available only when the input source is PC and the PIP source is Video or S-Video.

FUNCTION	DESCRIPTION
PIP Source	Selects the source for the PIP.
PIP Size	Press the ◀ / ▶ keys to scroll through the four alternatives: Off, Small, Medium, Large. ☞ When the resolution of the PC signal is 1280 x 1024 (SXGA), the selected Large PIP size will be reduced to the Medium size.
PIP Position	Selects a desired position for the PIP.
H Position	Adjusts the horizontal position of the PIP image.
V Position	Adjusts the vertical position of the PIP image.
More Options	Press the ◀ / ▶ keys to select more PIP functions including Brightness, Contrast, Color, Tint, Sharpness and System.
Brightness	Adjusts the brightness of the PIP image.
Contrast	Adjusts the degree of difference between dark and light in the PIP image. The higher the value, the greater the contrast.
Color	Increases or decreases the color intensity of the PIP image.
Tint	Adjusts the color tones of the PIP image. The higher the value, the more reddish the image becomes. The lower the value, the more greenish the image becomes.
Sharpness	Adjusts the image to make it appear sharper or softer
System	Shows Video input system format, NTSC, PAL, SECAM or YUV.

Packing Description

BAG CARRY

CUSHION EPE RIGHT
P/N:47.J9415.00X

CUSHION EPE LEFT
P/N:47.J9414.00X

ASSY ACCESSARY

PE BAG

CTN
P/N:44.J7601.XXX

CTN LBL
P/N: 45.L2701.XXX

EXTERIOR LBL
P/N: 45.J7601.0XX

1.EXTERIOR LBL :

P/N:45.J7601.021

2.CTN LBL PRINTING:

Model Name:

BenQ PB8250

Resolution :

XGA

Made in Taiwan

ISSUE:XXX

S/N: 99J8177B81YWWXXXXXH

UPC CODE
(840046004286)

EAN CODE
(4718755118104)

BAR CODE 39

P/N:45.L2701.001

1. CARTON SIZE:

      INTERNAL DIMENSION : 432   ∗ 350 ∗ 260   mm

      EXTERNAL DIMENSION : 442   ∗ 358 ∗ 277   mm (l * w * h)

      OUTSIDE DIMENSION : 452   ∗ 370 ∗ 292   mm (L * W* H)

2. SHIPPING CONTAINER

    40' CONTAINER DIMENSION : 11980* 2330 * 2360 mm (L * W * H)

    20' CONTAINER DIMENSION : 5900 * 2340 * 2360 mm(L * W * H)

3.

	20'(SETS)	40'(SETS)	AIR BY PALLET A	
WITH PALLET	504	1092	24	

4. PALLET SIZE (W*L*H)
   PALLET A :   **1110*900*120** (mm)

40' CONTAINER LOADING (WITH PALLET)
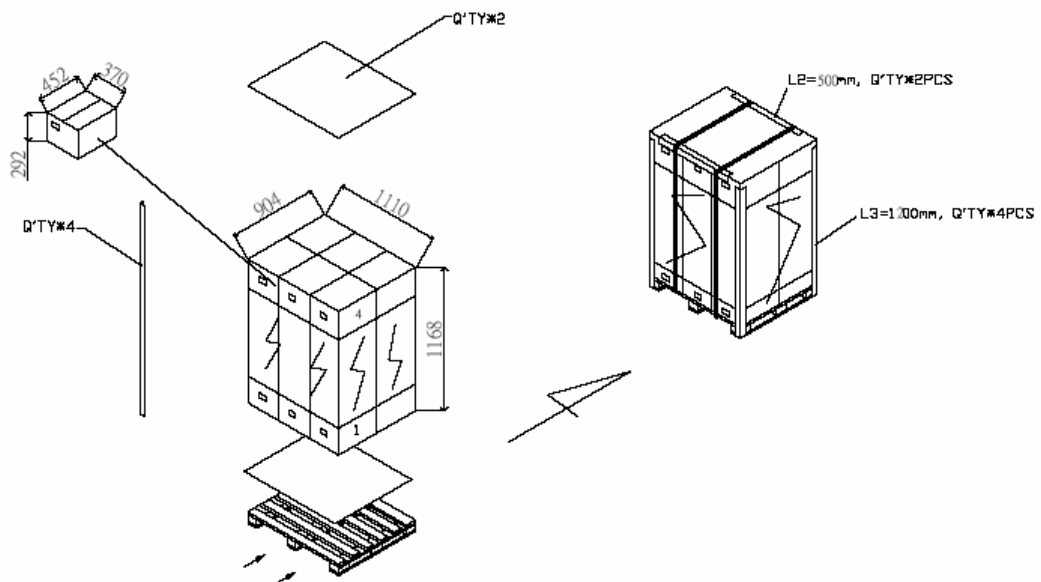
   26X6X7=1092 (SETS)
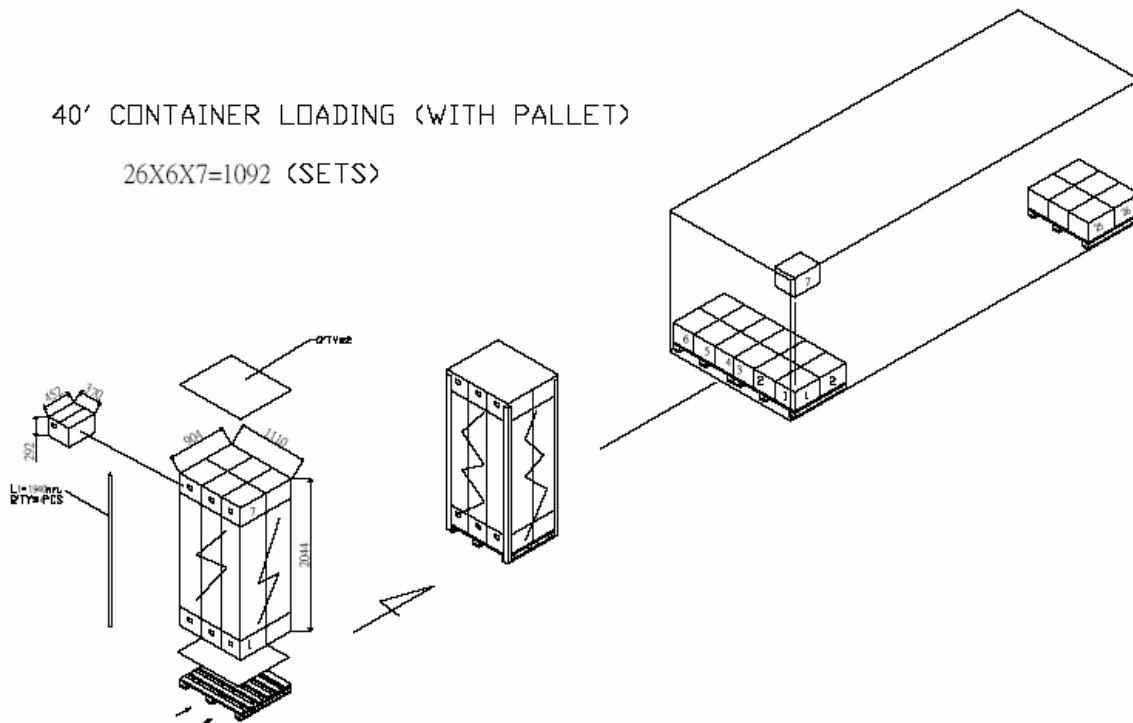
*** 底紙長寬應與棧板同，但可少 5mm 一圈

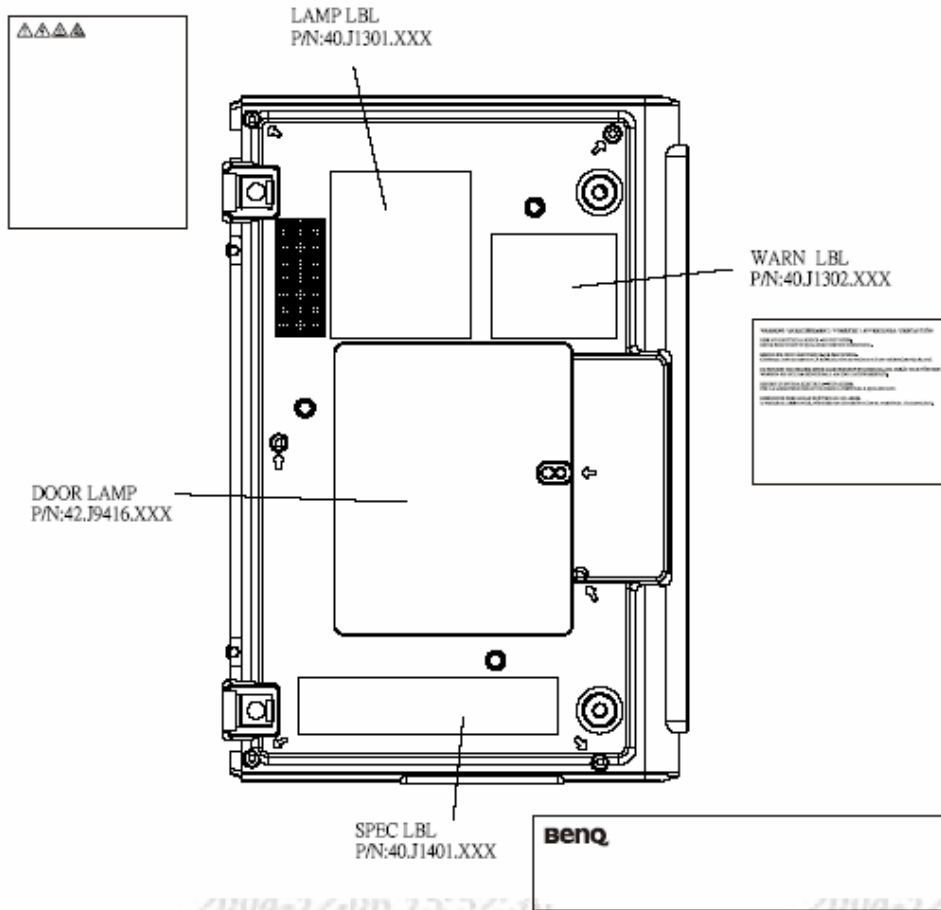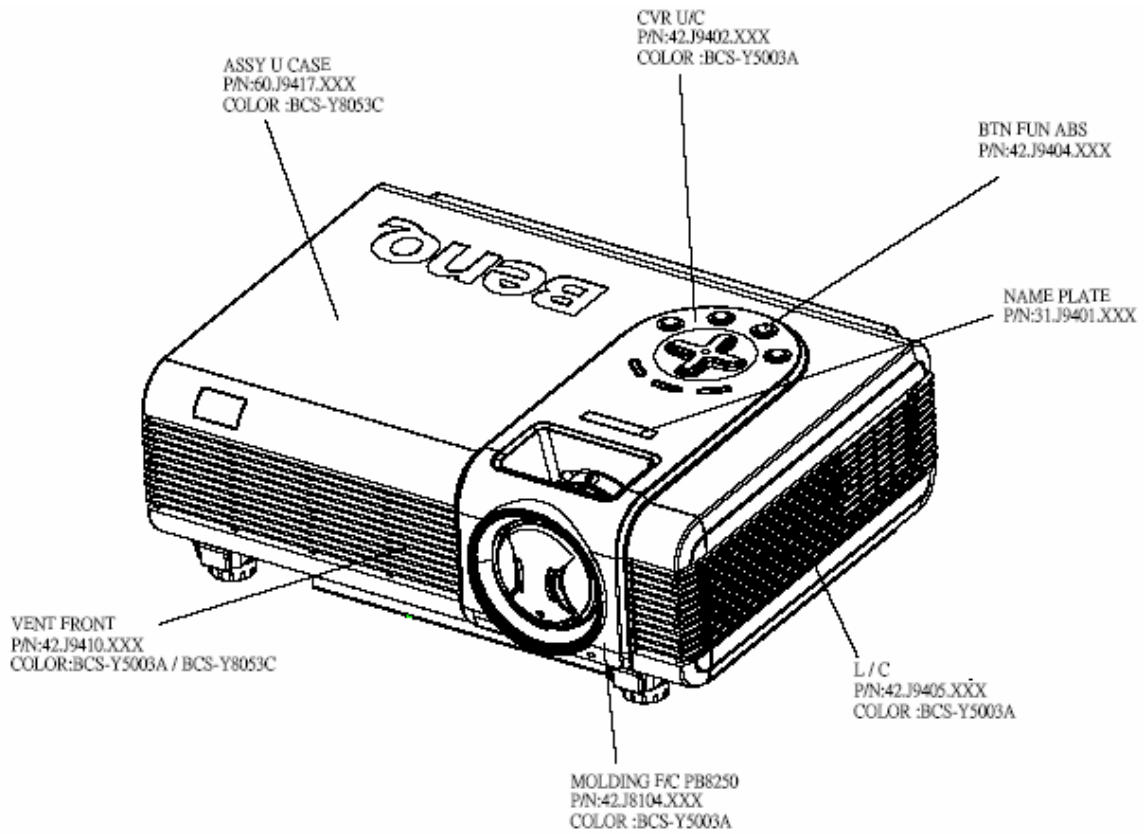## 20' CONTAINER LOADING (WITH PALLET)

12X6X7=504 (SETS)
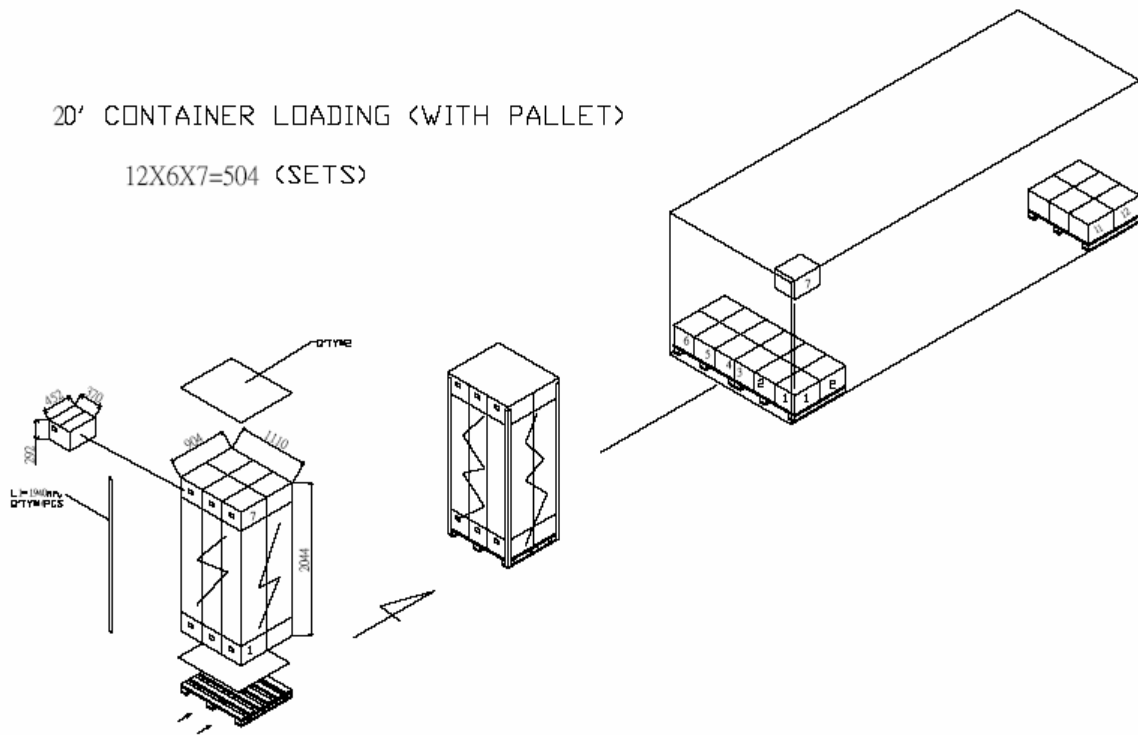
LOADING BY AIR (WITH PALLET)

3*2*4=24 (SETS)

*** 底紙長寬應與棧板同，但可少 5mm 一圈
*** 空運時可考慮使用 1140*970*120(工廠現有 size 取代)

Appearance Description

CVR U/C
P/N:42.J9402.XXX
COLOR :BCS-Y5003A

ASSY U CASE
P/N:60.J9417.XXX
COLOR :BCS-Y8053C

BTN FUN ABS
P/N:42.J9404.XXX

NAME PLATE
P/N:31.J9401.XXX

VENT FRONT
P/N:42.J9410.XXX
COLOR:BCS-Y5003A / BCS-Y8053C

L / C
P/N:42.J9405.XXX
COLOR :BCS-Y5003A

MOLDING F/C PB8250
P/N:42.J8104.XXX
COLOR :BCS-Y5003A

LAMP LBL
P/N:40.J1301.XXX

WARN LBL
P/N:40.J1302.XXX

DOOR LAMP
P/N:42.J9416.XXX
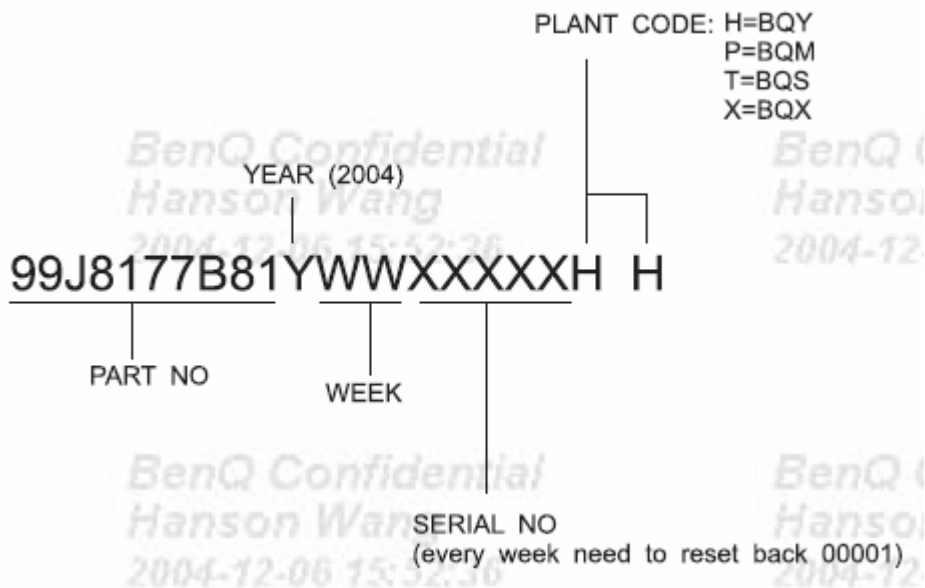
SPEC LBL
P/N:40.J1401.XXX

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1. SPEC LBL PRINTING

BenQ

BenQ Corporation
157 Shan-Ying Road
Gueishan, Taoyuan
333, Taiwan

US Patent #5270821

Model No. : PB8250
AC Rating : ~100-240V,50-60Hz,4.5A
Serial No. : 99J8177B81YWWXXXXXH   H
Mfg. Date : November   2004
Made in Taiwan   XXX

BAR CODE 39 (FOR SERIAL NO.)

FC Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE

N11444

c CSA® us
163009

CE PS E

VCI

ME61

MIC   SAFETY MARK   BenQ Japan Co. LTD.

E-0025-04-2702(0) 0 4 1 5 1 7 - 1 1

Arial, H=3.5 point   Arial, H=4.5 point

P/N:40.J1401.291

PLANT CODE: H=BQY
            P=BQM
            T=BQS
            X=BQX

YEAR (2004)

99J8177B81YWWXXXXXH H

PART NO

WEEK

SERIAL NO
(every week need to reset back 00001)

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2. LAMP LBL PRINTING

H=10 point

Lamp Unit: 60.J8106.001

HIGH VOLTAGE / HIGH TEMPERATURE / HIGH PRESSURE

BEFORE REPLACING THE LAMP, TURN OFF THE PROJECTOR AND REMOVE THE CABLE FROM THE WALL SOCKET. WAIT UNTIL THE LAMP HAS COOLED DOWN (MINIMUM OF 45 MINUTES). TOUCHING THE LAMP WHEN IT IS HOT MAY CAUSE BURNING. THIS IS A HIGH-PRESSURE LAMP WHICH WHEN HOT, MAY EXPLODE IF IT IS IMPROPERLY HANDLED. PLEASE REFER TO THE USER'S GUIDE FOR MORE INFORMATION.

HAUTE TENSION / HAUTE TEMPÉRATURE / HAUTE PRESSION

AVANT DE REMPLACER LA LAMPE, ÉTEIGNEZ LE PROJECTEUR ET DÉBRANCHEZ LE CORDON DE LA PRISE MURALE. ATTENDEZ QUE LA LAMPE REFROIDISSE (AU MOINS 45 MINUTES). NE TOUCHEZ PAS LA LAMPE TANT QU'ELLE EST CHAUDE. VOUS RISQUERIEZ DE VOUS BRÛLER. LORSQUE CETTE LAMPE À HAUTE PRESSION EST CHAUDE, ELLE PEUT ÉCLATER SI ELLE N'EST PAS MANIPULÉE CORRECTEMENT. POUR, DE PLUS AMPLES RENSEIGNEMENTS, VEUILLEZ VOUS REPORTER AU GUIDE DE L'UTILISATEUR.

ÜBERSPANNUNG / ÜBERTEMPERATUR / ÜBERDRUCK

SCHALTEN SIE VOR DEM AUSWECHSELN DER LAMPE DEN PROJEKTOR AUS, UND TRENNEN SIE DAS KABEL VON DER STECKDOSE. WARTEN SIE, BIS DIE LAMPE SICH ABGEKÜHLT HAT (MINDESTENS 45 MINUTEN). DAS BERÜHREN DER NICHT ABGEKÜHLTEN LAMPE KANN ZU VERBRENNUNGEN FÜHREN. HOCHDRUCKLAMPEN KÖNNEN BEI FALSCHER HANDHABUNG EXPLODIEREN. WEITERE INFORMATIONEN FINDEN DIE IM BENUTZERHANDBUCH.

ALTA TENSIONE / ALTA TEMPERATURA / ALTA PRESSIONE

PRIMA DI SOSTITUIRE LA LAMPADA, SPEGNERE IL PROIETTORE E STACCARE IL CAVO DALLA PRESA A MURO. ATTENDERE CHE LA LAMPADA SI SIA RAFFREDDATA (MINIMO 45 MINUTI). SE SI TOCCA LA LAMPADA QUANDO È CALDA, SI POSSONO RISCHIARE USTIONI. QUESTA È UNA LAMPADA AD ALTA PRESSIONE: SE NON MANEGGIATA CON CURA PUÒ ESPLODERE. PER ULTERIORI INFORMAZIONI, CONSULTARE LA GUIDA PER L'UTENTI.

ALTO VOLTAJE / ALTA TEMPERATURA / ALTA PRESIÓN

ANTES DE CAMBIAR LA LÁMPARA, APAGUE EL PROYECTOR Y DESENCHUFE EL CABLE DE LA TOMA DE CORRIENTE. DEJE QUE LA LÁMPARA SE ENFRÍE UNOS 45 MINUTOS COMO MÍNIMO. DE LO CONTRARIO, PODRÍA QUEMARSE SI LA TOCA. ESTA ES UNA LÁMPARA DE ALTA PRESIÓN QUE PUEDE EXPLOTAR SI NO LA MANEJA CON CUIDADO CUANDO ESTÁ CALIENTE. PARA MAYOR INFORMACIÓN, CONSULTE EL MANUAL DEL USUARIO.

Made in / Fabriqué à / Hergestellt in / Prodotto in / Fabricado en - Taiwan

P/N:40.J1301.023

3. WARN LBL PRINTING

WARNING / AVERTISSEMENT / VORSICHT / AVVERTENZA / PRECAUCIÓN

RISK OF ELECTRICAL SHOCK - DO NOT OPEN.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

RISQUE DE CHOC ÉLECTRIQUE, NE PAS OUVRIR.
CONFIEZ L'ENTRETIEN ET LA RÉPARATION DU PRODUIT À UN TECHNICIEN QUALIFIÉ.

ES BESTEHT DIE GEFAHR EINES ELEKTRISCHEN STROMSCHLAGS, GERÄT NICHT ÖFFNEN!
WENDEN SIE SICH IM SERVICEFALL AN EINE FACHWERKSTATT.

RISCHIO DI SCOSSA ELETTRICA - NON APRIRE.
PER LA MANUTENZIONE RIVOLGERSI A PERSONALE QUALIFICATO.

RIESGOS DE DESCARGAS ELÉCTRICAS: NO ABRIR.
SI NECESITA ASISTENCIA, PÓNGASE EN CONTACTO CON EL PERSONAL CUALIFICADO.

H=12 point

Lamp: OSRAM

Type No.: P-VIP 300/1.3 E21.8
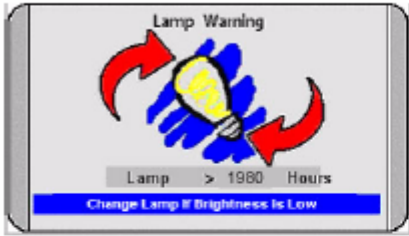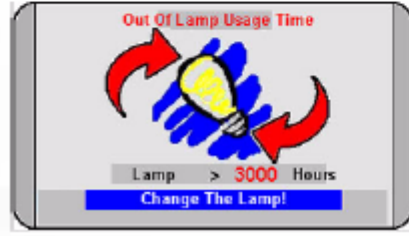
Max. Wattage: 300W

P/N:40.J1302.022

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Lamp Replacement

Use and Replacement of the Lamp

When the Lamp Indicator lights up red or a message appears suggesting it is time to replace the lamp, please install a new lamp or consult your dealer. An old lamp may cause a malfunction in the projector and in some instances the lamp may explode.

The following Lamp warning displays will remind you of the lamp condition.

Message	Status
Lamp Warning Lamp > 1980 Hours Change Lamp If Brightness Is Low	The lamp has been in operation for 1980 hours. Install a new lamp for optimal performance. If the projector is normally run with Preset "Economic Mode" selected (page 34), you may continue to operate the projector until the 2980 hour lamp warning appears.
Out Of Lamp Usage Time Lamp > 2980 Hours Change The Lamp! The Power Will Turn Off After 3000 Hours	The lamp has been in operation for 2980 hours, the power will shutdown in 20 hours time. A new lamp should be fitted to avoid the inconvenience when the projector runs out of lamp time.
Out Of Lamp Usage Time Lamp > 3000 Hours Change The Lamp!	The lamp has been in operation for over 3000 hours. This message will flash in the center of the screen together with the **Lamp indicator** lighting up red for 40 seconds. The projector will shutdown after 40 seconds. The lamp MUST be replaced before the projector will operate normally.

Lamp Replacement

To reduce the risk of electrical shock, always turn the projector off and disconnect the power cord before changing the lamp. To reduce the risk of severe burns, allow the projector to cool for at least 45 minutes before replacing the lamp.

To reduce the risk of injuries to fingers and damage to internal components, use caution when removing lamp glass that has shattered into sharp pieces.

To reduce the risk of injuries to fingers and/or compromising image quality by touching the lens, do not touch the empty lamp compartment when the lamp is removed.

This lamp contains mercury. Consult your local hazardous waste regulations and dispose of this lamp in the proper manner.

Step 1. Turn the power off and disconnect the projector from the wall socket.

Step 2. Turn the projector over. Then loosen the screws and remove the lamp cover. If the lamp is hot, avoid burns by waiting for 45 minutes until the lamp has cooled.
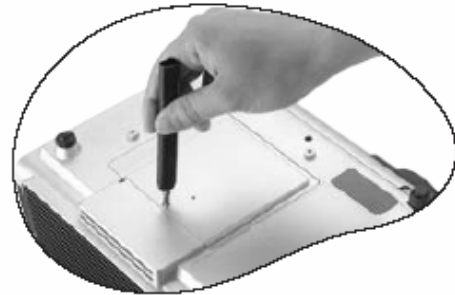
Step 3. Loosen the screw that fixes the lamp to the projector. If the screw is not loosened completely, you could injure your fingers. It is strongly recommended that you use a magnetic-head screwdriver.
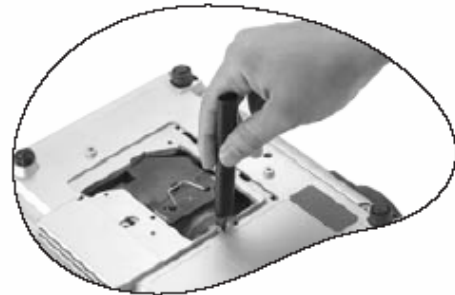
Step 4. Lift the handle so that it stands up. Use the handle to slowly pull the lamp out of the projector.

☞ Pulling too quickly may cause the lamp to break and scatter broken glass in the projector.

☞ Do not place the lamp in locations where water might splash on it, children can reach it, or near flammable materials.

☞ Do not insert your hands into the projector after the lamp is removed. If you touch the optical components inside, it could cause color unevenness and distortion of the projected images.


Step 5. Insert the new lamp. Make sure the handle is fully locked and tighten the screw firmly.

☞ A Loose screw may cause a bad connection, which could result in malfunction.

☞ Do not over tighten the screw.

Step 6. Re-install the lamp cover and tighten the screw. **Do not turn the power on with the lamp cover removed.** Whenever the lamp is replaced, reset the total lamp operation timer. **Do not reset if the lamp is not replaced as this could cause damage.**
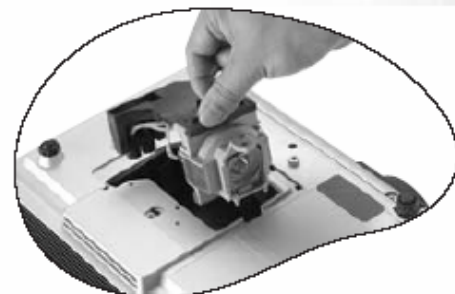
Step 7. **Reset the lamp counter**

    i. Press and hold **Exit** on the projector for 3 seconds to display the total used lamp time.

    ii. Press **Menu** on the projector or on the remote control to access the lamp hour timer. An adjustment message will appear.

    iii. Press ◄ or ► to reset lamp hours and press **EXIT** to leave.

> 166:25
> Press <Menu> To RESET

> 00:00
> Press <Exit> To Leave
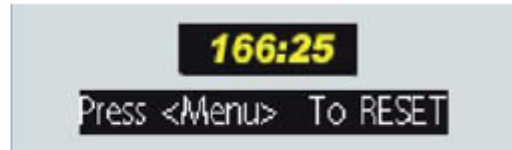
Temp Warning Light

When the Temperature warning light is on, it is warning you of the following possible problems:

1. The internal temperature is too high.
2. Air Filters are clogged.
3. The fans are not working.

Turn the projector off , check that the air filters are clean. If the problem persists, contact qualified service personnel for further help.

For more detailed information, please refer to the following section.

Indicators

Illustration - table legend.

1.   **Blank -** : Light OFF

2.   ⌐ ┐ : Light flashing

3.   ☐ : Light ON

4.   O : Orange light

5.   R : Red light

6.   G : Green light

LED			Status & Description
Power	**Temp**	**Lamp**	
Power events			
O	O	O	The projector has just been connected to a power outlet.
O	-	-	Stand-by mode.
O (flashing)	-	-	(1) The projector needs 90 seconds to cool down as it was abnormally shut down without the normal cooling down process. Or (2) The projector needs to cool for 90 seconds after the power is turned off.
G (flashing)	-	-	The **Power indicator light** is flashing during powering up.
G	-	-	The projector is under normal operation.
Lamp events			
-	-	-	The lamp counter has developed a problem.
-	-	R	It is warning you that lamp usage has exceeded 3000 hours. Replace the projection lamp with a new one immediately.
-	-	R (flashing)	The lamp is not properly attached or the lamp is damaged. Please contact your dealer for assistance.
Thermal events			
-	R (flashing)	-	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.
-	R (flashing)	G (flashing)	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.
-	R (flashing)	G	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.
G	R (flashing)	-	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.

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G	R	G	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.
G	R	G	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.
O	R	-	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.
O	R	G	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.
O	R	G	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.
R	G	R	The projector has shutdown automatically. If you try to re-start the projector, it will shutdown again. Please contact your dealer for assistance.

Shutdown

1. Press **Power** and a warning message appears. To turn the projector off, press **Power** again.
2. The **Power indicator light** flashes orange and the lamp shuts down, the fans continue to run for approximately 90 seconds to cool down the projector.

⚠ To protect the lamp, the projector will not respond to any commands during the cooling process.
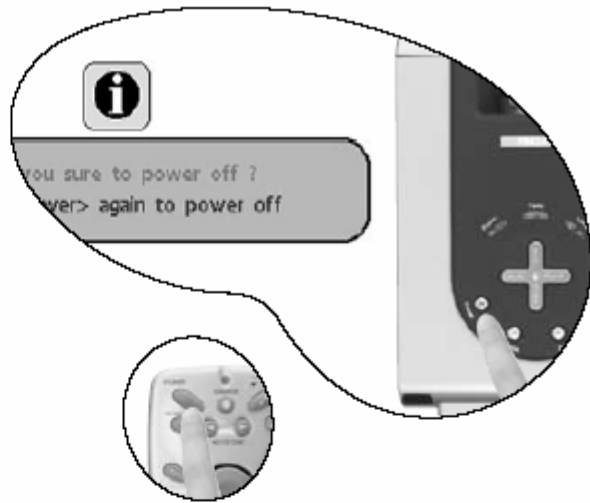
3. Turn the main power switch off.
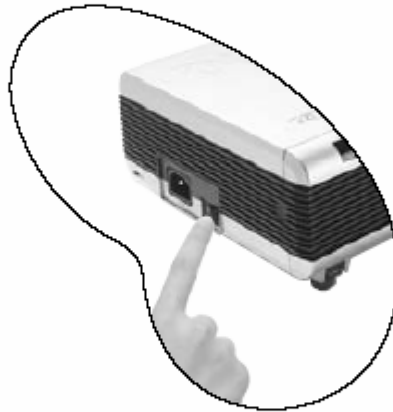
4. Disconnect the power cord from the wall socket.
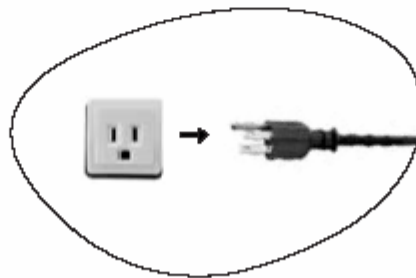
⚠ Do not unplug the power cord before the projector shutdown sequence is complete or during the 90-second cooling down process.
If the projector is not properly shut down, to protect the lamp, when you attempt to re-start the projector within hours, the fans will run for a few minutes to cool down. Press Power again to start the projector after the fans stop.

Chapter 4: Circuit Operation Theory

PB8250 DMD projector being using the XGA DMD Engine made by BENQ, it included

front end circuitry that digitizes and scaling processes for the input analog VGA and TV signals. As shown, in figure below the front end circuitry consists of :

1. Frond end Circuitry

1.1 Power supply module include PFC and DC/DC portion. DC/DC portion provide 12V, 5V and 2,5V for whole system.
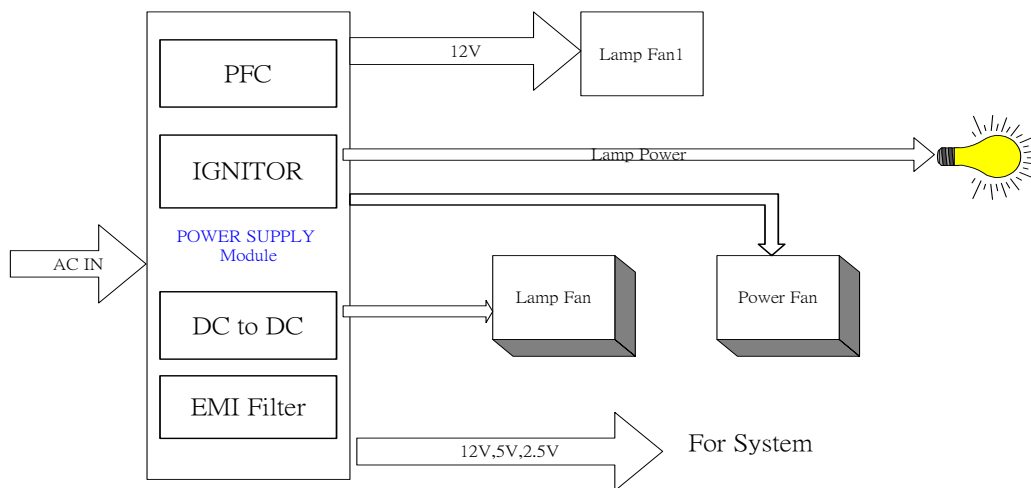
1.2 Pixelworks scaler(PW166) with x86 CPU, OSD and SDRAM is used for system control. It control whole system operation and with crucial role of this system.(Include fan speed, inter-lock SW,….) A/D-decoder(AD9882) are used for decoding VGA analog signal to digital signal(RGB 888) which provide 24 bit true color resolution and Digital Visual Interface (DVI) receiver . It can accept SOG(sync on green) and composite signal for PC input. It also support YpbPr.

1.3 The video decoder that process TV video signal input. The TV video signal support both of composite and S-video input and output YUV format to scaler processor. The basic block as following.

From Power Supply

12V,5V,2.5V

Regulator(3.3v)

EEPROM
(16K bit)

R.G.B OUT

Scaler(memory +cpu+osd)

THERMAL IC
SENSOR

DVI Input

RGB888 Signal

To DMD Driver

A/D Converter

D-Sub Input

Power(12V,5V,2.5V)

To DMD Driver

S-Video & RCA input

Video Decoder

Control Signal
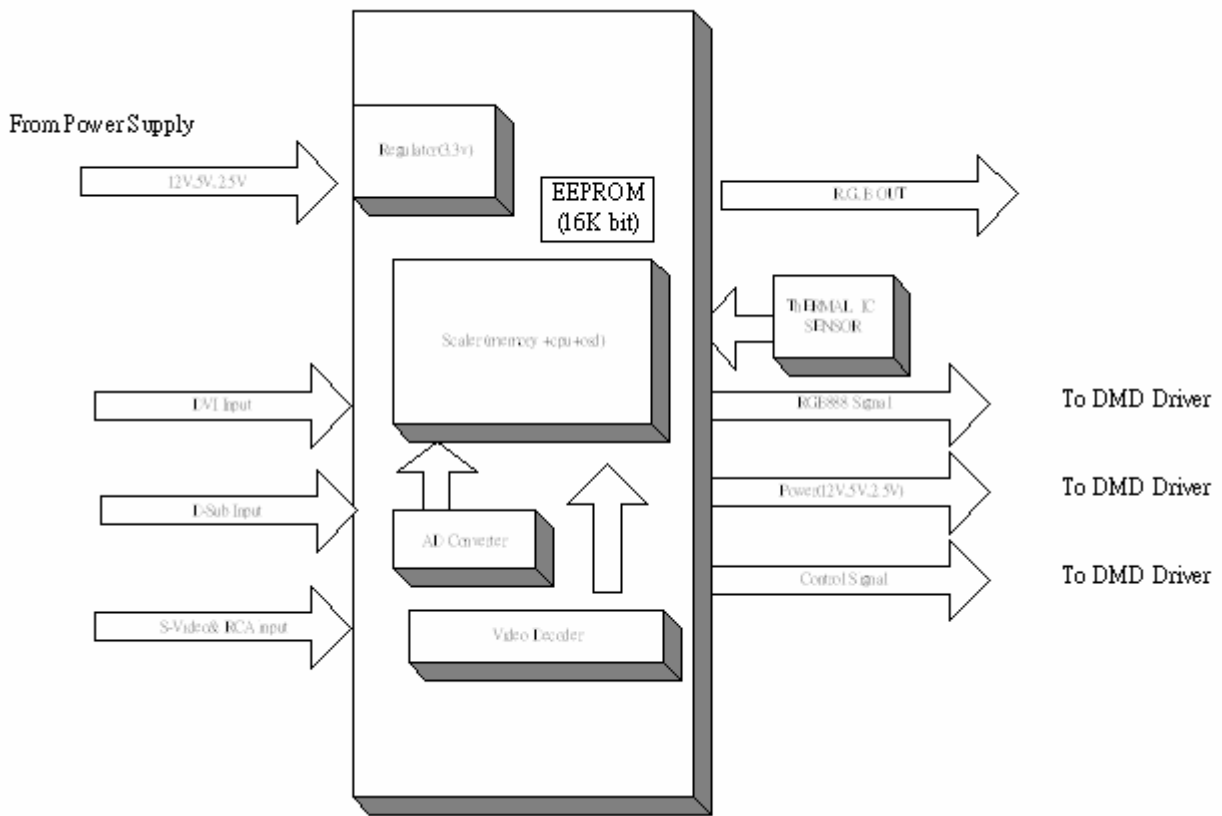
To DMD Driver

2. DMD driver board that transfer PW166 scaler output RGB888 signal to DMD chip acceptable signal for driving DMD mirror operation. The relate diagram as below:
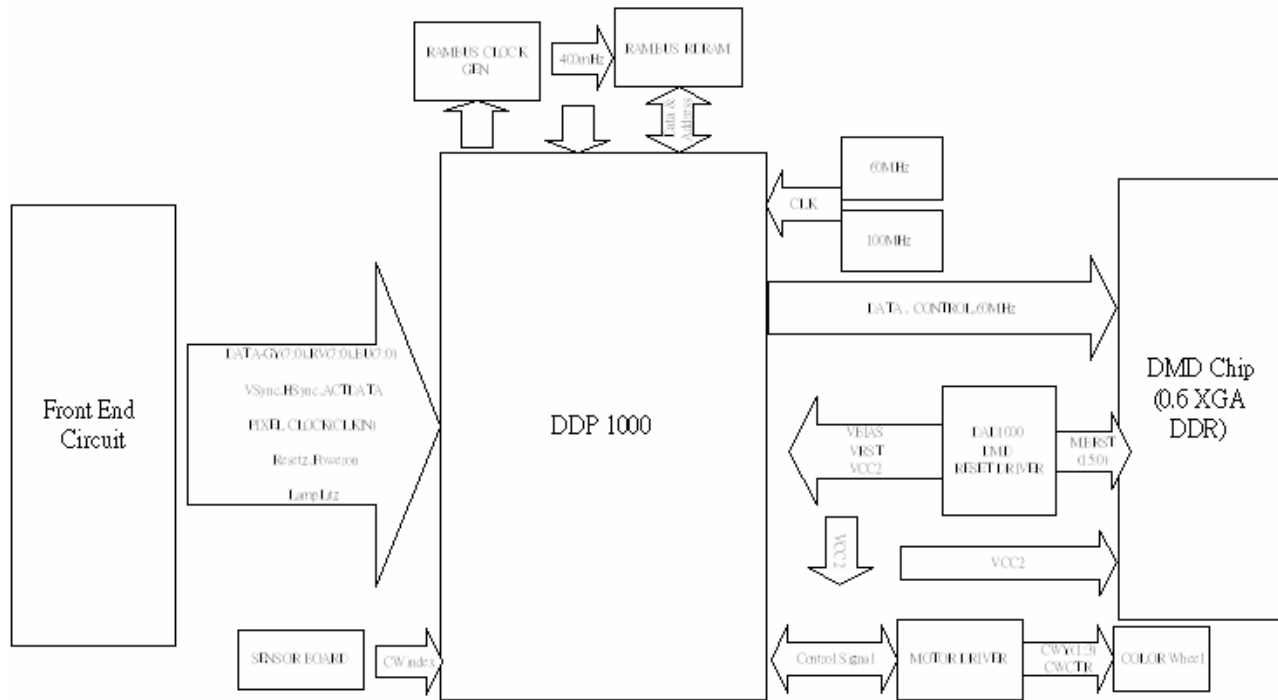
3. Whole system block diagram is show as below:

Block diagram labels:

- Optical Engine
  - Lamp Module
  - Optical Device
  - DMD
  - Color Wheel
- Power Board and Ballast
  - PFC
  - EMI Filter
  - Ballast
  - DC/DC
- Lamp On
- Data & Control Signal
- DMD CHIP Board
- Fan
- 2.5V, 5V, 12V
- Power & Control Data
- DMD Driver
- RGB 888
- Control Signal
- Main Board
  - PW166 Scaler
  - A/D Converter
  - Video Decoder
  - D-Sub Input DVI Input
  - Video Input S-video Input
- Color Wheel Sensor Board
- Sensor Signal
- Color Wheel Sensor
- Keypad
- IR Rear Board

Overview

The Main Board of PB8250 is mainly composed of an ADC converter(AD9882), a ImageProcessor(PW166) , a EEPROM(24C16) and a flash memory (MBM29LV800B) .

The input signal are DVI-I,DVI-A and analog RGB format , which comes from the standard DVI and VGA D_SUB connectors, the signal input to ADC converter , which output RGB digital data stream to Image Processor .

The Image Processor also known as "Scaler" , which indicate its main function , expand or downsize the digital picture from ADC to a fixed size digital image output .

The CPU which control the whole system is embedded inside the Image Processor , there is also a Real Time Operating System which incorporates with the CPU as hardware layer interface .

The EEPROM stores the system information such as brightness , contrast …which ensure the system operates under the most user friendly circumstance .

The Flash memory stored the Software Program which control the system , the CPU will read the Flash as its execution command .

Block Diagram

Below is the simple block diagram of PB8250 Main Board .
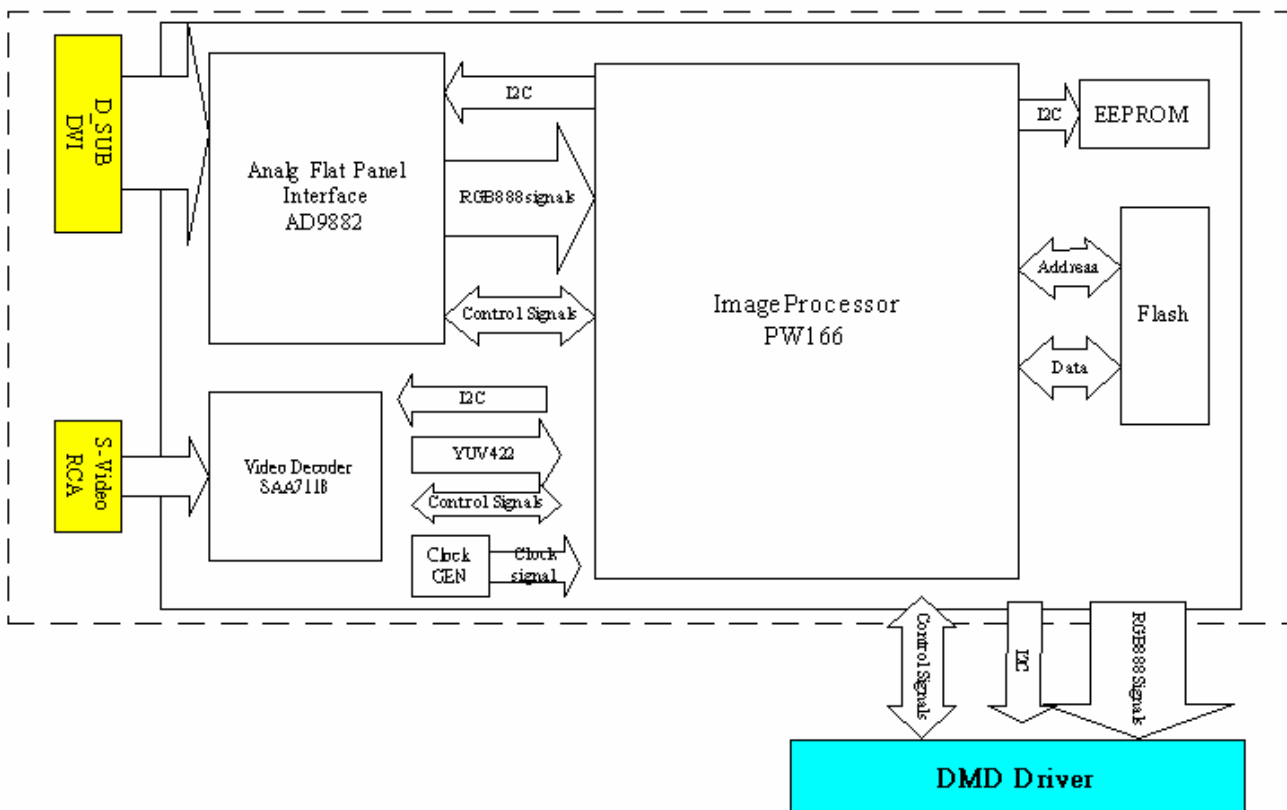
As the diagram shown above , here is the function of every discrete blocks .

- **D_SUB input**
  Analog RGB data input , the standard maximum analog input resolution is SXGA .There also some interface signals from the VGA cable , they are

ADHSYNC – Providing the Horizontal Synchronization signal to AD9882.

ADVSYNC - Providing the Vertical Synchronization signal AD9882.

DDC interface – Providing Digital Display Channel , which include VCC(Pin9) , SCL(Pin15) , SDA(Pin12) .

- **Analog Flat Panel Interface (ADC Converter) , AD9882**

  The ADC converter digitizes the input analog RGB data signal from D_SUB and offers designers Digital Visual Interface (DVI) receiver, then output the digital data streams to Image Processor. The normal voltage level of analog RGB input signals is about 0.7V , while the ADC digital signal output to Image Processor is LVTTL level , about 3.3V. The ADC , AD9882 could supports up to pixel rate at about 140MHZ , which is about SXGA 75HZ analog input signal(DVI resolutions up to SXGA 60Hz) . There are some other interface signals related to AD9882

  SOGIN – Sync On Green input from Image Processor , the signal enable the PB8250 support the very special VGA input signal .

  GCOAST – Input signal from Image Processor , the signal enable the PB8250 support the Machintosh analog input format .

  GCLK – Output to Image Processor as Pixel Clock , providing the reference clock for Image Processor .

  GHS – Providing the Horizontal Synchronization signal to Image Processor .

  GVS - Providing the Vertical Synchronization signal to Image Processor .

  GRE, GGE, GBE – Digital data stream to Image Processor which is higher than SXGA 75HZ .

- **Image Processor (PW166)**

  The most important IC is the image Processor , here below list its main function

  - Supporting input digital data stream up to UVGA and output digital data up to SXGA

  - Two input port , which are Graphic port (VGA format) and Video port (video   decoder format) .

  - Frame rate conversion , the output frame rate is independent from the input frame rate and the most important feature of the Image Processor is memory inside , there is no need of external memory for frame rate convertion.

  - Up and Down scaling of different input resolution , ensure the same output image size.

  - Providing Bitmap OSD picture , which if more fancy than normal OSD chip.

  - On chip Microprocessor

  The Image Processor is a highly integrated circuit , it include MCU , Scaler , Memory , OSD. This will increase the stability of the system. There is some control signals list below

  DCLK – pixel clock output to DMD driver BD , provided as a reference clock for DMD driver

  DVS – Vertical synchronization signal output to DMD BD , provided as Vertical reference signal for DMD driver.

  DHS – Horizontal synchronization signal output to DMD BD , provided as Horizontal reference signal for DMD driver.

DEN – Data enable signal output to DMD BD , provided as a valid data indicator signal for DMD driver.

VCLK – V-port pixel clock.

VPEN – V-port data enable.

VVS – V-port Vertical Synchronization.

VHS – V-port Horizontal Synchronization.

VFILED – V-port Even/Odd frame indicator.

RESETZ – Output to DMD driver BD as RESETZ signal for DMD normal operation.

ABNORMAL – Input to CPU for indicating abnormal condition , if the CPU detects an abnormal status , it will disable lamp ignition.

POWERON – Output to power to enable the other power source into normal working situation.

LAMPLIT – Input signal as an indicator that the Lamp is ON or OFF

LED1, LED2 – Output to enable the LED ON or OFF.

IRRCVR0 – System IR input to CPU as remote control signals.

MCKEXT – Memory clock to CPU.

DCKEXT – Data clock to for Scaling.

I2C_SDA , I2C_SCL – I2C format data transfer line.

- **EEPROM**
  Store the system information for user friendly .

- **Flash Memory**
  System software was stored in this chip , the memory size is 8M bits

- **DDP1000**
  The DDP1000 transfer signal from PW166 to DMD for driving DMD mirror operation.

- **Direct Rambus Memory**
  The DDP1000 utilizes a high speed Direct Rambus Memory. To support the RDRAM a Direct Rambus clock generator CDCR83 is utilized. It can transfer input clock from 50MHz to 400MHz.

IR Receiver schematic:

The IS1U621 is miniaturized receivers for infrared remote control systems. PIN diode and pre-amplifier are assembled on lead frame, the epoxy package is designed as IR filter. The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the reliable function even in disturbed ambient and the protection against uncontrolled output pulses.

Electronic System Protection for abnormal state:

The circuit of electronic system protection for abnormal state is used for the hardware light off and power off in abnormal state of thermal and safety issues. If the protection function is active then the

software system will detect the abnormal signal.

Sensor BD:

The Sensor BD provides the color wheel index signal to DMD BD. The CWINDEX shall indicate the beginning of the red light on the DMD device. The phase of the display data on the DMD based on the CWINDEX signal. It can be configured to delay the CWINDEX for electronic alignment of the color wheel. The timing of CWINDEX and the delayed CWINDEX is shown in Figure 1.
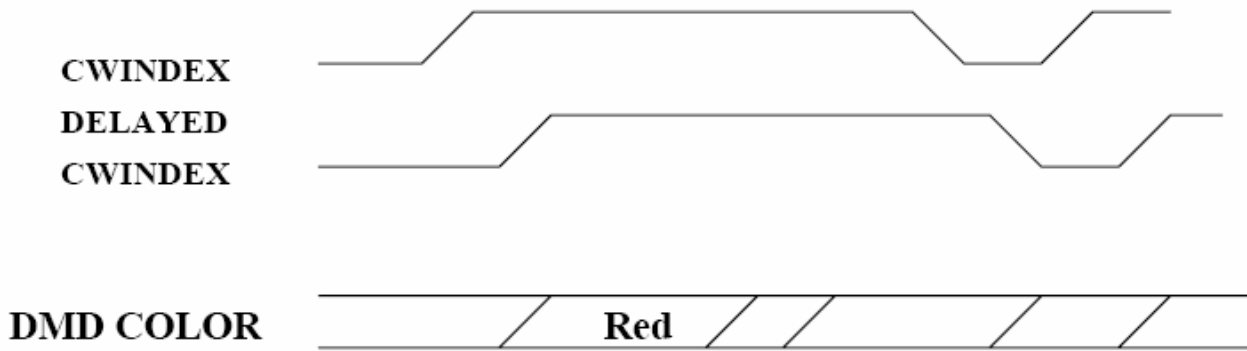
FIGURE 1

Chapter 5: Alignment Procedure

1. DMD Bias Voltage Alignment

Equipment: None

Procedure:

(1) Watch DMD "Bias Voltage Bin" Label (Example: 8060-7bbc DDDD XXXXXXX M   )
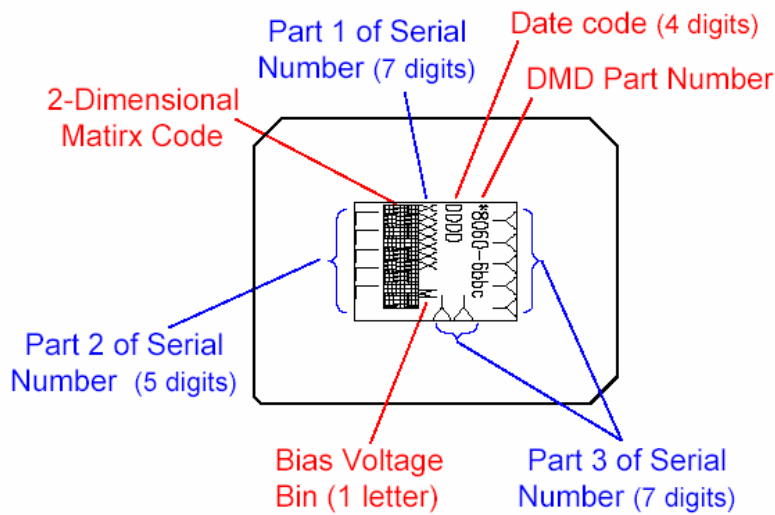
(2) Switch the DIP switch (H8) on Chip board according to the red character on the DMD chip

00: E
01: D
10: C
11: B
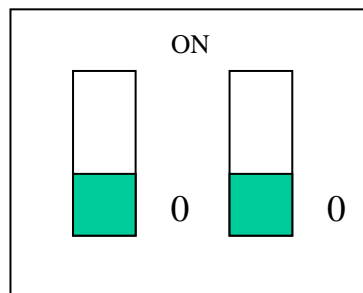
2. Color Wheel Delay Alignment

Equipment:

- Battery Biased Silicon PIN Detector
- Oscilloscope

- Probe

Procedure:

(1) Probe impedance matches 50 ohm
(2) Open Factory OSD, and select color wheel delay item
(3) Leave the image pure red (DMD red curtain)
(4) Put the detector on the screen that red image was projected.
(5) Watch the oscilloscope and notice the square waveform
(6) Use the "→" and "←" key to increment or decrement the color wheel delay value
(7) No matter the waveform is square or not, let the waveform was lagged first
(8) Then increment or decrement the value to let the waveform to be square
(9) Do not adjust too much, let the signal get ahead, if it happens, go back to step 7 and do it again.
(10) Change the input to pure blue and repeat the above procedures again.

Lag → Exact ← Ahead
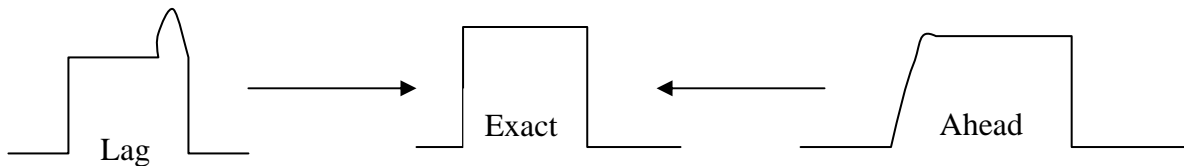
3. PC Color Alignment Procedure

Equipment:

- Pattern generator

Procedure:

(1) Connect power, D-sub, into projector.
(2) Change pattern generator to pattern 47 (16 gray bar).
(3) Light on projector
(4) Enter factory mode.
(5) Choose ADC Brightness item to Press.
(6) Choose ADC Contrast item to Press.
(7) Change pattern generator to pattern 32 gray bar.
(8) See if any gray level was abnormal, if the abnormality happened, went back to step 4 and then redid it again.
(9) Quit factory mode, after above adjustments finished.

4. S-Video and HDTV Color Adjustment Procedure

Equipment:

- Pattern generator (VG-828)
- Lux meter (CL-100) or CA 120

Procedure:

    (a) S-video adjustment(current source is S-video)

        (1) color spec   x: 0.281±0.015   y: 0.297±0.015

        (2) Change Timing and Pattern of pattern generator

Timing:480i (60Hz)

Pattern:80% Gray pattern

        (3) Adjust R.G.B 9300K Gain to match spec

  (b) Get spec for YpbPr (current source is S-video)

           (1)   Change Timing and Pattern of pattern generator

Timing:480i (60Hz)

Pattern:25% Gray pattern

        (2)   Read x value →x0 ,read y value →y0

  (c) Ypbpr Offset adjustment(current source is YpbPr)

        (1)   color spec   x: x0±0.010   y: y0±0.010

        (2) The variance of color coordinate via Pb offset and Pr offset:

	x	y
Pb offset ↓	x ↓	y ↓
Pb offset ↑	x ↑	y ↑
Pr offset ↓	x ↑	y ↓
Pr offset ↑	x ↓	y ↑

If we line the x and y, then the Pb offset is the shift action and the Pr offset is the rotational action.

(3) Connect power, YPbPr Video into projector.

(4) Change Timing and pattern of pattern generator :

Timing : 480P(H:31.54 KHz,V:60.08 Hz)

pattern : black

(5) Light on projector

(6) Set user OSD values to default.

(7) Enter factory mode.

(8) Set Factory values to default.

(9) Follow the PbPr offset adjustment flow chart:

Use Lux meter to read the coordinate of black and the value note (x1,y1).

Case x1>x0 & y1>y0

Case x1<x0 & y1<y0

Case x1>x0 & y1<y0

Case x1<x0 & y1>y0

Decrease Pb offset until x<=x0 or y<=y0

Increase Pb offset until x>=x0 or y>=y0

Increase Pr offset until x<=x0 or y>=y0

Decrease Pr offset until x>=x0 or y<=y0

A

B

C

D

Case x<=x0: The value note (x2,y2). Dy = y2 - y0.

Case y<=y0: The value note (x2,y2). Dx = x2 - x0.

Case x>=x0: The value note (x2,y2). Dy = y0 - y2.

Case y>=y0: The value note (x2,y2). Dx = x0 - x2.

Case x<=x0:

Case y>=y0:

Case x>=x0:

Case y>=y0:

C

B

A

D

Decrease Pb offset until the y value <= y2 - 1/2Dy . Now, the reading of the Lux meter = (x3,y3) and x3 will < x0, y3 will > y0.

Decrease Pb offset until the x value <= x2 - 1/2Dx . Now, the reading of the Lux meter = (x3,y3) and x3 will > x0, y3 will < y0.

Increase Pb offset until the y value >= y2 + 1/2Dy . Now, the reading of the Lux meter = (x3,y3) and x3 will > x0, y3 will < y0.

Increase Pb offset until the x value >= x2 + 1/2Dx . Now, the reading of the Lux meter = (x3,y3) and x3 will < x0, y3 will > y0.

Decrease Pr offset the x value will increase and y value will decrease to meet the spec.

Increase Pr offset the x value will decrease and y value will increase to meet the spec.

Increase Pr offset the x value will decrease and y value will increase to meet the spec.

Decrease Pr offset the x value will increase and y value will decrease to meet the spec.

Chapter 6: Trouble Shooting

Common Problems & Solutions

⑦ THE PROJECTOR DOES NOT TURN ON.

Cause	Remedy
There is no power from the power cable.	Plug the power cord into the AC inlet on the projector, and plug the power cord into the power outlet. If the power outlet has a switch, make sure that it is switched on.
Attempting to turn the projector on again during the cooling process.	Wait until the cooling down process has completed.

⑦ NO PICTURE

Cause	Remedy
The video source is not turned on or connected correctly.	Turn the video source on and check that the signal cable is connected correctly.
The projector is not correctly connected to the input source device.	Check the connection.
The input signal has not been correctly selected.	Select the correct input signal with the **Source** key on the projector or remote control.
The lens cap is still attached to the lens.	Remove the lens cap.

⑦ BLURRED IMAGE

Cause	Remedy
The projection lens is not correctly focused.	Adjust the focus of the lens using the focus ring.
The projector and the screen are not aligned properly.	Adjust the projection angle and direction as well as the height of the unit if necessary.
The lens cap is still attached to the lens	Remove the lens cap.

⑦ REMOTE CONTROL DOES NOT WORK

Cause	Remedy
The batteries are out of power.	Replace both of the batteries with new ones.
There is an obstacle between the remote control and the projector.	Remove the obstacle.
You are too far away from the projector.	Stand within 6 meters (19.5 feet) of the projector.

1. Optical Engine

No.	Item	Trouble Shooting Guide
1	Brightness	1. If brightness is within 3% of spec, tighten SL/AL tube and re-adjust FM with overfill alignment procedure 2. Check overfill: Re-install SL and AL to ensure correct position 3. Change lamp
2	Uniformity	1. Check FM installation 2. Check overfill: Re-install SL and AL to ensure correct position 3. Change lamp
3	FOFO Contrast	1. Check ADC calibration 2. Check user's menu brightness & contrast are default 3. Clean DMD 4. Clean PL
4	ANSI Contrast	1. Clean PL 2. Clean DMD 3. Change PL
5	Color	1. Check color wheel delay 2. Check CW 50% point. Replace CW if necessary
6	Color Uniformity	1. Change lamp 2. Change CM
7	Blue Edge	1. Make sure the LP end is touching with LP-Holder Datum 2. Check LP: If LP is crushed, replace with new LP 3. Readjust FM 4. Check overfill size: If overfill size is too small, re-adjust overfill size with overfill alignment procedure
8	Blue/Purple Border	1. re-install SL and AL to ensure correct position 2. Check FM installation
9	Focus	1. Change Projection Lens

		2. Put shim metal between upper side of DMD and DMD datum
10	Dust	Clean DMD
11	Horizontal/Vertical Strips	1. Check connector between FPC and M/B 2. Re-install DMD with FPC 3. Check if any pin of C-Spring is missing, damaged or dirty 4. Change new FPC/C-Spring 5. Change new DMD
12	Pixel Fail	Change new DMD

2. Main board

Start

Power Voltage
1.chk J1, 2.5V(7,8,12),5V(3,4),12V(1)
2.chk UA2 Pin 5~8 is 5V

System no work — Yes
1.chk voltage input from DC-DC/B : 2.5V,5V,12V
2.chk oscillator Y2,Y3 output frequency (16.257MHz,)
3.chk MCLK(U15-5,130MHz) and DCLK(U16-5, 65MHz)
4.chk U12whether S/W inside or bad soldering
5.change U14(bad soldering)
6.chk Reset IC (U12)
7.chk Abnormal signal
8.chk Resetz(RN15-4),Poweron(RN15-5) ,DVS(RN8-3),DEN(RN8-1),DHS(RN8-2),DCLK(RN8-4)
9. Please check DDP1000 electronics debugging flow diagram in next page.

No data — Yes
1.chk output from U11(RN1,RN2,RN3,RN4,RN5,RN6) [graphics input]
2.chk output from U10 (Via VUV[0:7]&VY{0:7]) [video input]
3.chk U14 and its peripherals (as above block)

No image when graphics is the current input — Yes
1.chk D_SUB cable
2.chk HSYNC_B(US11-3), VSYNC_B(US11-6)
3.chk U11 voltage source U9(3.3V),UA16(3.3V), UB1(3.3V)
4.chk U11 GHS(89),GVS(87),GFBK(88),GCLK(85)
5.chk U11 soldering
6.change U11

No image when video is the current input — Yes
1.chk U10 voltage source U9,UA1
4.chk Y1 output frequency(24.576MHz)
5.chk U10 output signals to U14
6.chk U10 soldering
7.chagne U10

Unable to download — Yes
1.chk wire between Main/B and Connector/B
2.chk J5 pin 8 and pin9 on Main/B
3.chk J5 pin8 and pin9 on Connector/B
4.change U6 on Connector/B

Unable to save OSD setting — Yes
1.change U13

Keypad malfunction — Yes
1.chk RN17-RN20 soldering
2.chk CN8-CN11 soldering
3.chk U17,U18
4.chk J9 pin short or not
5.chk wire between Main/B and Keypad/B
5.chk keypad/B

Fan malfunction — Yes
Fan control:
1.chk the voltage of QF1 (pin5,6,7,8)
2.chk the fan voltage U28(pin 2,15),U29(pin8)
3.chk Y6(32.768kHz), U904A pin5(16.384kHz)
4.chk U31 pin1(12V) and pin3(Fan3_P>5V)

DDP1000 Electronics Debugging Flow Diagram

Apply Power to boards

↓

When DC supply voltages are in spec drive PWRGOOD High

↓

After specified time drive RESETZ High

↓

Allegro Clock = 8.33MHz? — N →

1. Check 2.5V, 3.3V & 5V Supply Voltages
2. Verify RESETZ and PWRGOOD are high
3. Check 100MHz Oscillator
4. Check that Flash is programmed
5. Check Flash to DDP1000 interconnect
6. Verify DDP1000 POSTST is floating
7. Verify DDP1000 TRSTZ is low
8. Verify DDP1000 ICTSENZ is high
9. Verify DDP1000 LSSDEN and IBMT_RI are low

Y ↓

Color Wheel Spins Up? — N →

1. Check 12V Supply Voltages
2. Check motor cable interconnect
3. Check values of Allegro timing capacitors
4. Check MTRDATA, MTRCLK and MTRSELZ
5. Verify 5V pullup resistor are installed on MTRDATA, MTRCLK and MTRSELZ and EXT_ARSTZ

Y ↓

Lamp Lights and stays on? — N →

1. Check if LAMPEN is driven high
2. Check if color wheel is running at correct rate
3. Check interconnect to ballast
4. Verify TACH signal from motor driver to DDP1000 is running at half the frequency of the CWINDEX
5. Check lamp and ballast
6. Verify that PWRGOOD or RESETZ does not glitch during ignition

Y ↓

Lamp goes off when lamp type is selected — Y →

1. **Check CWINDEX is occurring once per color wheel revolution**
2. Verify the correct lamp sync timing is being generated
3. Check lamp and ballast
4. Check that LAMPEN stays high
5. Check that color wheel is not spinning down

N ↓

Image is displayed — N →

1. **Check CWINDEX is occurring once per color wheel revolution**
2. **Check LAMPLITZ is low**
3. **Verify SYNCVALID is high**
4. Check DMD interconnect
5. Verify input VSYNCZ, HSYNCZ, ACTDATA & CLKIN are valid

Y ↓

Good Image Displayed — Y → **END**

N ↓

(1)

Page 1 of 3

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```
        ( 1 )
          │
          ▼
    ╱Bad image - 16╲         1. Check DMD interconnect
   ╱ pixel wide vertical╲──Y──▶ 2. Check DMD data outputs from DDP1000
    ╲  column(s)  ╱                ASIC to DMD pads
          │N
          ▼
    ╱Bad image -  ╲         1. Check DMD interconnect
   ╱ Horizontal bands╲──Y──▶ 2. Check outputs from SR16C or DAD1000
    ╲  or lines  ╱           3. Check input voltages to SR16C
          │                  4. Replace DMD, SR16C or DAD1000 if
          │N                    needed
          ▼                   5. Check VCC2 voltage is correct

    ╱Bad image –  ╲         1. Check interconnect on data inputs GY(7:0),
   ╱ Corrupted color╲──Y──▶    RV(7:0), BU(7:0)
    ╲ ramp test image╱        2. Check color wheel alignment
          │                   3. Check CWINDEX has only one rising edge
          │N                     transition per color wheel revolution
          ▼                   4. Check color wheel is running in correct
                                 direction
                              5. Verify sequence version is correct from
                                 color wheel
                              6. Verify flash checksum
                              7. Verify the color wheel is runing at correct
                                 rate

    ╱Bad image –  ╲         1. Check data interconnect between
   ╱ Vertical white lines╲─Y─▶  RDRAMs and DDP1000 ASIC
    ╲            ╱            2. Replace RDRAM or DDP1000 if needed
          │
          │N
          ▼
    ╱Bad image – all or╲     1. Check address and control signal
   ╱ most of image is ╲──Y──▶   interconnects between DDP1000 and the
    ╲  corrupted  ╱              RDRAM
          │                   2. Replace DDP1000 or RDRAMS if needed
          │N                  3. Check DMD VCC and VCC2
          ▼                   4. Check DMD interconnect
        ( 2 )                 5. Verify the DMD clock rate matching the
                                 rate selected for the sequences
```

```
        ( 2 )
          |
          v
    /─────────────\
   /  Image shifted to \    Y    ┌────────────────────────────────────────┐
   \       left        /────────>│ 1)  OLACT floating or tied high all the  │
    \─────────────/             │     time                                 │
          |                      └────────────────────────────────────────┘
          | N
          v
    /─────────────\
   /  Dim and/or inverse \   Y    ┌────────────────────────────────────────┐
   \       image         /───────>│ 1)  Check DMD interconnect               │
    \─────────────/             │ 2)  Check DMD                            │
          |                      │ 3)  Check SR16C or DAD1000               │
          | N                    │ 4)  Check DMD drive voltages (VBIAS,     │
          v                      │     VCC2, VRESET)                        │
   ┌──────────────────┐          └────────────────────────────────────────┘
   │ Please contact your │
   │ DLP™ Products       │
   │ representative.     │
   └──────────────────┘
```

3. Keypad BD

```
    /─────────\
   / Keypad     \    No     ┌─────────────────────────────────────────────┐
   \ function   /──────────>│ LED dark                                     │
    \─────────/            │   1.chk LED voltage from J1                   │
          |                 │   2.chk the mounting direction of LEDs       │
          | Yes             │ No work                                      │
          v                 │   1.chk buttons contact to PCB               │
                            └─────────────────────────────────────────────┘
```

```
    /─────────\
   / Rear Front IR \   No     ┌─────────────────────────────────────────────────────────┐
   \ function      /─────────>│ 1.chk U1 voltage source(5V)                              │
    \─────────/             │ 2.chk U1 output signal (always 5Vdc in regular time,no   │
                             │   pulse voltage)                                          │
                             │ 3. chk U1 pin 1, 2 input signal                           │
                             └─────────────────────────────────────────────────────────┘
```

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4. Power BD

```
┌─────────────────┐
│ Power BD Check. │
└─────────────────┘
         │
         ▼
      ╱Fuse╲
     ╱Broken?╲──── No ────►┌──────────────────────┐
     ╲       ╱             │ Disconnect the wire   │
      ╲     ╱              │ form DC-DC bd. to     │
       ╲   ╱               │ PFC bd.               │
         │                 └──────────────────────┘
        Yes                           │
         │                            ▼
         ▼                 ┌──────────────────────┐
   ╭─────────────╮         │                       │
   │ Proceed to  │         │   Prepare Meter.      │
   │ "Primary    │         │                       │
   │ Circuit     │         └──────────────────────┘
   │ Check".     │                    │
   ╰─────────────╯                    ▼
                            ┌──────────────────────┐
                            │                       │
                            │   Check output 12V    │
                            │                       │
                            └──────────────────────┘
```

```
┌─────────────┐
│ No 12VOutput.│
└──────┬──────┘
       │
       ▼
   ╱─────────╲          No      ╭──────────────────╮
  ╱ B+=325VDC ╲──────────────▶ │ Proceed to " Primary│
  ╲    ?     ╱                  │   Circuit Check"   │
   ╲────┬────╱                  ╰──────────────────╯
       │ Yes
       ▼
   ╱─────────╲       No    ╱──────────────────╲      No   ┌─────────────┐
  ╱ TOPSwitch ╲──────────▶╱ Lacks of some componets ╲───────▶│ Check Trace. │
  ╲  Broken ? ╱           ╲  around TOPSitch ?       ╱        └─────────────┘
   ╲────┬────╱             ╲──────────┬─────────────╱
       │ Yes                          │ Yes
       ▼                              ▼
┌─────────────┐              ┌─────────────┐
│ Replace new │              │ solder them. │
│ TOPSwitch   │              └─────────────┘
└─────────────┘
```
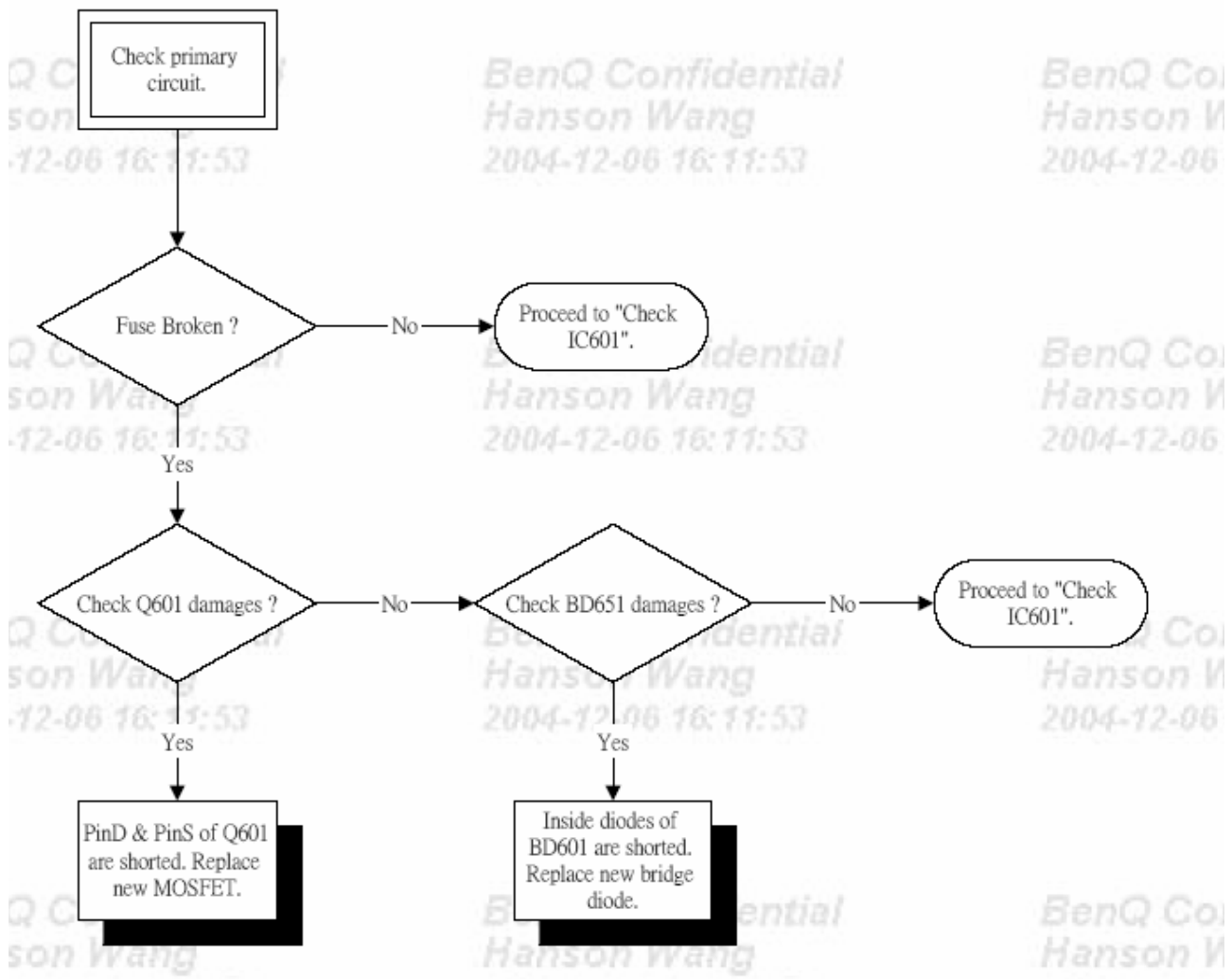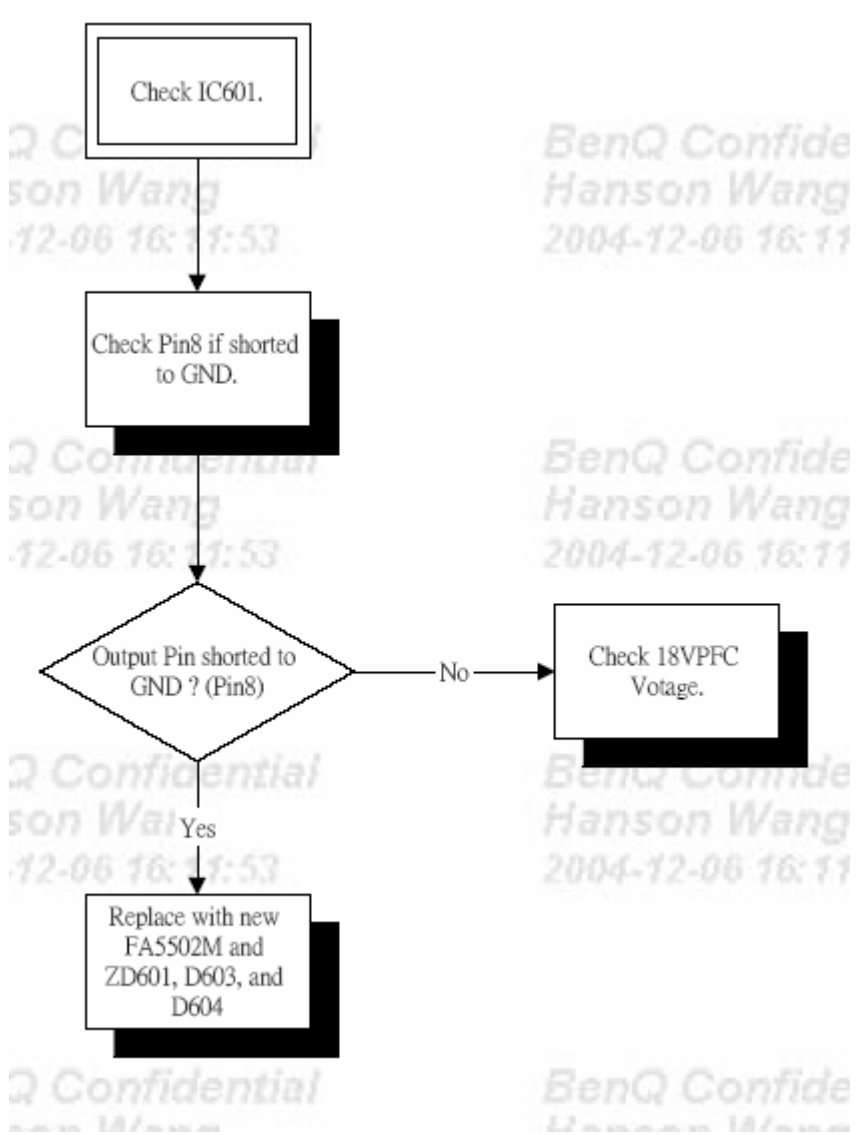
Chapter 7: Schematics drawing

KS32C50100

AP_RS232_HEAD

Benq Corporation

Damping resistor
should close to
MCU

Benq Corporation

WIRELESS BD BOARD

Screw Holes

Optional Points

Benq Corporation

WIRELESS BD BOARD