Product Service Manual – Level II

Service Manual for BenQ:
GL2055
GL2055A
GL2055M

P/N: 9H.L8JLB.QP*
P/N: 9H.L8JLB.Q8*
P/N: 9H.L8KLB.QP*
Applicable for All Regions

Version: 001
Date:2012/03/16

Notice:
- For RO to input specific "Legal Requirement" in specific NS regarding to responsibility and liability statements.

- Please check BenQ's eSupport web site, http://esupport.benq.com, to ensure that you have the most recent version of this manual.

First Edition (Sep., 2009)

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Abbreviations & Acronyms

1 About This Manual

This manual contains information about maintenance and service of BenQ products. Use this manual to perform diagnostics tests, troubleshoot problems, and align the BenQ product.

1.1. Trademark

The following terms are trademarks of BenQ Corporation:

BenQ

Importance

Only trained service personnel who are familiar with this BenQ Product shall perform service or maintenance to it. Before performing any maintenance or service, the engineer MUST read the "Safety Note".

2 Introduction

This section contains general service information, please read through carefully. It should be stored for easy access place for quick reference.

2.1. RoHS (2002/95/EC) Requirements

– **Applied to all countries require RoHS.**

The RoHS (Restriction of Hazardous Substance in Electrical and Electronic Equipment Directive) is a legal requirement by EU (European Union) for the global electronics industry which sold in EU and some counties also require this requirement. Any electrical and electronics products launched in the market after June 2006 should meet this RoHS requirements. Products launched in the market before June 2006 are not required to compliant with RoHS parts. If the original parts are not RoHS complaints, the replacement parts can be non ROHS complaints, but if the original parts are RoHS compliant, the replacement parts MUST be RoHS complaints.
If the product service or maintenance require replacing any parts, please confirming the RoHS requirement before replace them.

2.2. Safety Notice

1. Make sure your working environment is dry and clean, and meets all government safety requirements.
2. Ensure that other persons are safe while you are servicing the product. DO NOT perform any action that may cause a hazard to the customer or make the product unsafe.
3. Use proper safety devices to ensure your personal safety.
4. Always use approved tools and test equipment for servicing.
5. Never assume the product's power is disconnected from the mains power supply. Check that it is disconnected before opening the product's cabinet.
6. Modules containing electrical components are sensitive to electrostatic discharge (ESD). Follow ESD safety procedures while handling these parts.
7. Some products contain more than one battery. Do not disassemble any battery, or expose it to high temperatures such as throwing into fire, or it may explode.
8. Refer to government requirements for battery recycling or disposal.

2.3. Compliance Statement

Caution: This Optical Storage Product contains a Laser device. Refer to the product specifications and your local Laser Safety Compliance Requirements.

2.4. General Descriptions

This Service Manual contains general information. There are 3 levels of service:
Level 1: Cosmetic / Appearance / Alignment Service
Level 2: Circuit Board or Standard Parts Replacement
Level 3: Component Repair to Circuit Boards

2.5. Related Service Information

BenQ Global Service Website: http://www.benq.com/support/
eSupport Website: http://esupport.benq.com/v2

3 Product Overview

3.1. Specification

Introduction

GL2055/GL2055A/GL2055M is defined as an 20" WXGA++ 16:9 wide entry level LCD monitor. The monitor supports maximum resolution up to 1600x900. The monitor shall support the VGA and DVI (optional) with HDCP input.

The features summary is shown as below,

*All panel spec. in Q201 definition depends on the variance of panel source.

*All spec. of monitor need to warm up at least 1hr.

* To test the "Contrast Ratio" and "Luminance" functions, the color status must be "User preset" mode.

* 1. "Contrast Ratio": Set "brightness" at 100, and "contrast" at 80.

* 2. "Luminance": Set "brightness" at 100, and "contrast" at 100.

AUO **M200RTN01.0**

Feature items	**Specifications**	**Remark**
Panel supplier & module name	AUO **M200RTN01.0**	TN, Normally White and LED Backlight
Screen diagonal	20"	442.8(H) x 249.075(V)
Display Format	1600 (H) x 900 (V)	Panel Display information
Pixel Pitch	0.2768 mm x 0.2768 mm	per one triad
Viewing Angle (@ Contrast Ratio >= 10)	R+L:90 degrees (typ) and U+D: 65 degrees (typ) R/L:70 degrees (min) and U/D: 45 degrees (min)	
Analog interface with Scaling supported	Yes	With 15-pin D-sub connector
DVI interface with Scaling supported	Yes (GL2055 /GL2055M)	With 24-pin DVI-D connector
Video interface with Scaling supported	No	
Max resolution mode supported	1600 (H) x 900 (V)@60Hz	
Number of Display Colors supported	16.7 millions	RGB 6 bits + FRC data
Contrast Ratio	700:1 (typ.)	
Luminance	200 cd/m^2 (typ.),160 cd/m^2 (min)	
AC power input	Yes	90-264 Volts, 47-63 Hz.
DC power input (with AC power adapter)	No	
DPMS supported	Yes	Off mode<0.3W Sleep Mode <0.3W
LED indicator for power status showed	Yes	Green/Amber/Non
OSD for control & information supported	Yes	

Multi-language supported for OSD	Yes	17 languages
Buttons control supported	Yes	6 buttons including 1 monitor power on/off control button.
Flywheel control supported	No	
Scaling function supported	Yes	
Auto adjustment function supported	Yes	“I-Key” function
DDC function supported (EDID ver. 1.3)	Yes	DDC2B
DDC-CI support version 1.1 or later	Yes	DDC-CI
Audio speakers supported	Yes	Only for GL2055M
Audio Jack (input connector) supported	Yes	Only for GL2055M
Earphone Jack (input connector) supported	Yes	Only for GL2055M
Microphone function supported	No	
Mechanical Tilt base design	Yes	From -5 to +15 degree
VESA wall mounting design	Yes	
Mechanical Rotate design	No	
Mechanical Lift base design	No	
Kensington compatible lock design	Yes	

Operational Specification

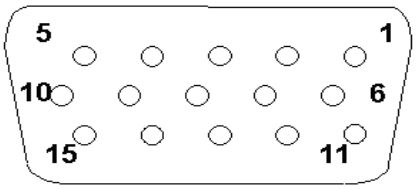
3.1.7.1 Power supply

Item	Condition	Spec	OK	N.A	Remark
Input Voltage range	Universal input full range	90~264VAC /47~63Hz	√		
Input Current range	90 ~ 264VAC	≤ 1.0 Arms	√		
Power Consumption	Normal “On” operation	< =26 W	√		LED: Green
DPMS	DPMS “Off” state	< 0.3 W	√		LED: Off
	DPMS “Sleep” state	< 0.3 W			LED: Amber
Inrush Current	110 VAC 220 VAC	< 30 A (peak) < 60 A (peak)	√		Cold-start
Earth Leakage Current	264 VAC/50Hz	< 3.5 mA	√		
Hi-Pot	1. 1500VAC, 1 sec 2. Ground test: 30A, 1sec	Without damage < 0.1 ohm	√		(on-line test) (in-lab test)
Power Line Transient	IEC1000-4-4	1KV	√		
	IEC1000-4-5 (Surge)	Common: 2KV, Differential: 1KV	√		
LED backlight operation range	90 ~ 264VAC	70mA Typ.	√		Depends on panel source
Power cord		Color: Black Length: 1800 +/- 50 mm	√		

3.1.7.2 Signal interface

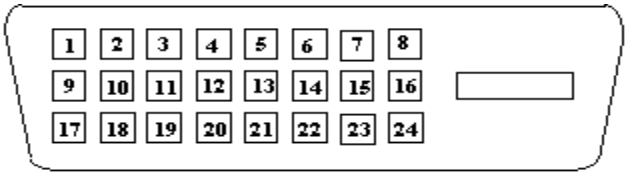
Item	Condition	Spec	OK	N.A	Remark
Signal Cable	15-pin D-Sub	Color: Black Length: 1800 +/- 30 mm	√		
	24-pin DVI-D	Color: Black Length: 1800 +/- 50 mm	√		(GL2055 /GL2055M)
Pin assignment	15-pin D-sub connector	See Note-1	√		For 15-pin D-sub
	24-pin DVI-D connector	See Note-2	√		For 24-pin DVI-D (GL2055 /GL2055M)
Video input	Signal type	Separate analog R/G/B	√		For 15-pin D-sub
	Level	700 mV (peak to peak)	√		
	Impedance	75 Ohms +/- 1.5 Ohms	√		
Sync input	Signal type	Separate H/V-sync Composite H/V-sync (Positive/Negative)	√		For 15-pin D-sub
	Level	Logic High: 2.4V ~ 5.5V Logic Low: 0V ~ 0.5V (TTL level)	√		Refer to VESA VSIS Standard V1R1
	Impedance	Minimum 2.2KΩ(pull down)	√		10KΩ for application
	Sync Pulse Width (SPW)	0.7μs < H-SPW 1H < V-SPW	√		
Digital input	Level	600mV for each differential line	√		
	Impedance	50 Ohm TDR Scan needed for DVI cable and interface board	√		

Note-1: The pin assignment of 15-pin D-sub connector is as below,



Pin	Signal Assignment	Pin	Signal Assignment
1	Red video	9	PC5V (+5 volt power)
2	Green video	10	Sync Ground
3	Blue video	11	Ground
4	Ground	12	SDA
5	Cable Detected	13	H-Sync (or H+V)
6	Red Ground	14	V-sync
7	Green Ground	15	SCL
8	Blue Ground		

Note-2: The pin assignment of 24-pin DVI-D connector is as below,



Pin	Signal Assignment	Pin	Signal Assignment
1	TMDS RX2-	13	Floating
2	TMDS RX2+	14	+5V Power
3	TMDS Ground	15	Ground
4	Floating	16	Hot Plug Detect
5	Floating	17	TMDS RX0-
6	DDC Clock	18	TMDS RX0+
7	DDC Data	19	TMDS Ground
8	Floating	20	Floating
9	TMDS RX1-	21	Floating
10	TMDS RX1+	22	TMDS Ground
11	TMDS Ground	23	TMDS Clock+
12	Floating	24	TMDS Clock-

3.1.7.3 Input Video performance Requirement

Item	Condition	Spec	OK	N.A	Remark
Max. support Pixel rate		165 MHz	√		
Max. Resolution		1600 x 900	√		
Rise time + Fall time		< 3.1 ns (50% of minimum pixel clock period)	√		1600 x 900 @ 60Hz (max. support timing)
Settling Time after overshoot /undershoot		<5% final full-scale value	√		Refer to VESA VSIS Standard V1R1
Overshoot/Undershoot		< 12% of step function voltage level over the full voltage range	√		Refer to VESA VSIS Standard V1R1

3.1.7.4 Scan range

Item	Condition	Spec	OK	N.A	Remark
Horizontal		30-83 KHz	√		
Vertical		50-76 Hz	√		

3.1.7.5 Plug & Play DDC2B DDC-CI Support

Item	Condition	Spec	OK	N.A	Remark
DDC channel type		DDC2B	√		
EDID		Version 1.3	√		Refer to FP92E S/W spec. document to see the detailed EDID data definition.
DDC-CI		Version 1.1 or Later	√		Refer to FP202 S/W spec

3.1.7.6 Support Timings

	Resolution	Pixel clock	H-sync	V-sync
1600x900		(unit:MHz)	(unit:KHz)	(unit:Hz)
P	640x350	25.18	31.47	70.09
P	640x480	25.17	31.47	59.94
P	640x480	31.50	37.50	75.00
P	720x400	28.32	31.47	70.08
P	832x624	57.27	49.71	74.53
P	800x600	40.00	37.88	60.32
P	800x600	49.50	46.88	75.00
P	1024x576	46.966	35.82	60
P	1024x600	48.964	37.32	60
P	1024x768	65.00	48.36	60.00
P	1024x768	80.00	60.24	74.93
P	1024x768	78.75	60.02	75.03
P	1152x720	66.75	44.86	60
P	1152x864	108.00	67.50	75.00
P	1152x870	100.00	68.68	75.06
P	1152x900	92.94	61.80	65.95
P	1280x720	74.25	45.00	59.94
P	1280x720	74.50	44.77	59.86
P	1280x720	95.75	56.46	74.78
P	1280x768-R	68.25	47.40	60.00
P	1280x800	83.50	49.702	59.81
P	1280x800	106.6	62.795	74.934
P	1280x960	108.00	60.00	60.00
P	1280x1024	108.00	63.98	60.02
P	1280x1024	135.00	79.98	75.02
P	1360x768	85.50	47.71	60.01
P	1366x768	85.50	47.71	59.79
P	1440x900	106.5	55.935	59.887
P	1440x900	136.75	70.6	75
P	1600X900-R	108	60	60

3.1.7.7 Video performance
***All spec. of monitor need to warm up at least 1hr.**

Item	Condition	Spec	OK	N.A	Remark
Resolution	Any input resolution modes which are under 1600x900	1600x900	√		
Contrast ratio		700:1 (typ.)	√		
Brightness	At R/G/B saturated condition	200 cd/m^2 (typ.),160(min)	√		
Response time	Rising + Falling time	5 ms (typ.),10ms(max)	√		Test Equipment: Westar TRD 100 or equal level equipment ;
Viewing angle	At Contrast ratio = 10	R+L: 90 degrees (typ.)	√		
	At Contrast ratio = 10	U+D: 65 degrees (typ.)	√		
CIE coordinate of White		(1) Bluish mode: (x,y)= (0.283, 0.297)+/-(0.02, 0.02) (2) Reddish mode: (x,y)= (0.326, 0.342)+/-(0.02, 0.02) (3) 6500K mode : (x,y)= (0.313, 0.329)+/-(0.02, 0.02) (4) sRGB: (x,y)= (0.313, 0.329)+/-(0.015, 0.015)	√		
Display colors		16.7 Millions colors	√		6 bit + FRC

Color temperature specification:

Color mode	Color temperature	x	Y	
Normal	6500k	0.313±0.020	0.329±0.020	Min 150cd/m^2
Bluish	9300k	0.283±0.020	0.297±0.020	Min 120 cd/m^2
Reddish	5800k	0.326±0.020	0.342±0.020	Min 150 cd/m^2
User Mode	Panel default color temp.			Min 150 cd/m^2
sRGB	6500k (Gamma=2.2±0.2)	0.313±0.015	0.329±0.015	160 ± 20 cd/m^2

3.1.7.8 Brightness Adjustable Range

Item	Condition	Spec	OK	N.A	Remark
Brightness adjustable range	At default contrast level (saturate point) & Full-white color pattern	(Max. brightness value – Min. brightness value)≧ 100 cd/㎡	√		

3.1.7.9 Acoustical Noise

Item	Condition	Spec	OK	N.A	Remark
Acoustical Noise	At 1 meter distance & “Audio” function disabled	≦ 28 dB/A	√		

3.1.7.10 Environment

Item	Condition	Spec	OK	N.A	Remark
Temperature	Operating	0 ~ +40 ℃	√		
	Non-operating	-20 ~ +60 ℃	√		
Humidity	Operating	10 ~ 90%	√		Non-condensing
	Non-operating	10 ~ 90%	√		Non-condensing
Altitude	Operating	0~3048m (10,000ft)	√		Without packing
	Non-operating	0~12,192m (40,000ft)	√		With packing

3.1.7.11 Transportation

Item	Condition	Spec	OK	N.A	Remark
(1) Vibration	Package, Non-Operating	(1) Test Sweep Frequency (Hz) / PSD (G^2/Hz) 1 / 0.0001 4 / 0.01 100 / 0.01 200 / 0.001 * Acceleration: 1.15G; (1)The product should be packaged andnon-operating. (2) The duration of endurance is 30 minutes per axis (X, Y and Z)	√		

		(3) Procedure: Confirmed sample with appearance and function ready before testing then compare with after test record as brightness, uniformity and contrast ratio. Perform random vibration after sine-wave vibration test.			
(2) Unpackaged Vibration	Unpackaged, Non-Operating	Test Spectrum: 20 Hz 0.0185(g2/Hz) 200Hz 0.0185(g2/Hz) Duration : 5 Minutes Axis : 3 axis (Horizontal and Vertical axis ,Z axis)	√		
(3) Drop	Package, Non-Operating	91 cm Height (MP stage) (1 corner, 3 edges, 6 faces) Drop test with packing gross weight and falling height relationship Gross Weight (Kg) / FallingHeight (cm) N/A: 106 0.0≦W<4.5: 91 4.5≦W<20.5: 76 20.5≦W<34.0: 61 34.0≦W<45.5: 46 45.5≦W<79.4: 31	√		
(4) Shock	Wooden package, Non-Operating	Waveform: half sine Faces: 6 sides/ per orientation 3 shocks. Duration: <3ms Velocity accelerate: 75g	√		

3.1.7.12 Electrostatic Discharge Requirements

Item	Condition	Spec	OK	N.A	Remark
Electrostatic Discharge	IEC801-2 standard	Contact: 8KV Air: 15KV	√		

3.1.7.13 EMC

Item	Condition	Spec	OK	N.A	Remark
TCO03	Electric	Band 1 < 10 V/m Band 2 < 1 V/m	√		
	Magnetic	Band 1 < 200nT Band 2 < 25nT	√		
EMI	FCC part 15J class B	After Mass production under 1dBuv for constant measure. Besides DNSF and VCCI class-2 are optional.	√		
	EN55022 class B				

3.1.7.14 Reliability

Item	Condition	Spec	OK	N.A	Remark
MTBF Prediction	Refer to MIL-217F	> 60,000 Hours	√		Excluding backlight
LED Life time	At 25±2℃, under 6.0mA	30,000 Hours (min)	√		See Note-4

Note-4: Based on the operating current is 110mA.

Audio performance

Item	Condition	Spec	OK	N.A	Remark
Preamp + Power amp					
(1)Output power	@ 1KHz	1 Wrms/CH		√	
(2)THD (@ 1W)	@ 1W 1KHz	<1%		√	
(3)S/N ratio		>40dB		√	
Speaker Driver					
(1)Nominal impedance	@ 1KHz	8 ± 15% ohm		√	
(2)Rated input power		1 W/CH		√	
(3)Frequency response	SPL-10dB	500~20KHz		√	
(4)Output sound pressure level	1W 0.5M	80 ± 3 dB		√	
(5)Dimension of box		35x16mm^2		√	
Audio Control					
(1)Volume range		0 ~100 levels		√	
(2)Mute		On/Off		√	

LCD Characteristics

3.1.7.15 The Physical definition & Technology summary of LCD panel

AUO_ M200RW01

Item	Condition	Spec	OK	N.A	Remark
LCD Panel Supplier		AUO	√		
Panel type of Supplier		M200RW01	√		
Screen Diagonal		20”	√		
Display area	Unit=mm	442.8(H) x 249.075(V)	√		
Physical Size	Unit=mm	462.8(H) x272.0(V) x 10.8(D)	√		
Weight	Unit=gram	1650(typ.)	√		
Technology		TN type	√		
Pixel pitch	Unit=mm	0.2768(H) x 0.2768(W)	√		Per one triad
Pixel arrangement		R/G/B vertical stripe	√		
Display mode		Normally White	√		
Support color		16.7 Millions colors	√		6 bit + FRC

3.1.7.16 Optical characteristics of LCD panel

Item	Unit	Conditions	Min.	Typ.	Max.	Remark
Viewing Angle	[degree] [degree]	Horizontal (Right) CR = 10 (Left)	40 40	45 45	- -	
	[degree] [degree]	Vertical (Up) CR = 10 (Down)	15 40	20 45	- -	
Contrast ratio		Normal Direction	420	700		
Response Time	[msec]	Rising Time	-	3.4	7.4	
	[msec]	Falling Time	-	1.6	2.6	
	[msec]	Rising + Falling	-	5	10	
	[msec]	Gray to Gray(Avg.)		-		
Color / Chromatic Coordinates (CIE)		Red x	-	0.650	-	
		Red y	-	0.337	-	
		Green x	-	0.289	-	
		Green y	-	0.610	-	
		Blue x	-	0.146	-	
		Blue y	-	0.067	-	
Color Coordinates (CIE) White		White x	-	0.313	-	
		White y	-	0.329	-	
Luminance Uniformity	[%]	9 points measurement	75	80		
White Luminance @ CCFL 7.5mA (center)	[cd/m^2]		180	200	-	
Crosstalk (in 75Hz)	[%]				1.5	

* The test methods for the above items' definition, please refer to the relative panel specification.

User Controls

3.1.7.17 User's hardware control definition

Item	Condition	Spec	OK	N.A	Remark
Power button			√		
Enter button			√		
Up/Inc. button			√		
Down/Dec. button			√		
Menu button			√		
Mode button				√	
Input Select button				√	
iKey button			√		
Mute button				√	

3.1.7.18 OSD control function definition

Item	Condition	Spec	OK	N.A	Remark
Auto Adjust		Auto-Geometry	√		
Brightness			√		
Contrast			√		
Horizontal Position			√		
Vertical Position			√		
Pixel Clock			√		
Phase			√		
Color		Bluish Reddish Normal sRGB Senseye User: Separate R/G/B adjustment Reset Color	√		
OSD Position		OSD Horizontal position OSD Vertical position	√		
OSD Time		From 5 sec to 30 sec	√		
OSD Lock			√		
Language		17 languages	√		
Recall		Recall All	√		
Mode		Standard / sRGB /Movie / Photo/Game/Eco	√		
Input Select			√		
Sharpness			√		
Display Information		For input timing	√		
Volume			√		
Mute			√		
Hot key for Brightness				√	
Hot key for Contrast				√	
Hot key for Volume			√		
Hot key for Input Select			√		
Hot key for Mode			√		

Mechanical Characteristics

3.1.7.19 Dimension

Item	Condition	Spec	OK	N.A	Remark
Bezel opening		444.82*251.10 mm	√		
Monitor without Stand	W x H x D mm	490.69*299.89*57 mm	√		
Monitor with Stand	W x H x D mm	490.69*370.74*163.9mm	√		
Carton Box (outside)	L x W x H mm	551*118*370(WW) 553*120 *375(JP)	√		
Tilt and Swivel range		Tilt: -5°~15° degree Swivel: 0 degree	√		tolerance ±1.5°

3.1.7.20 Weight

Item	Condition	Spec	OK	N.A	Remark
Monitor (Net)		2.96Kg	√		
Monitor with packing (Gross)		4.15 Kg	√		

3.1.7.21 Plastic

Item	Condition	Spec	OK	N.A	Remark
Flammability		>ABS<,94-HB	√		
Heat deflection To	ABS	65 ℃	√		
UV stability	ABS	Delta E < 8.0	√		
Resin		MPRII: ABS (SD0150)	√		
Texture		Bezel,Stand Polishing#8000 RC 咬花MT11015 +LOGO Polish#8000	√		
Color		DB59A	√		

3.1.7.22 Carton

Item	Condition	Spec	OK	N.A	Remark
Color		Kraft	√		
Material		C Flute(WW) BE Flute(JP)	√		
Compression strength		200 KGF	√		
Burst Strength		16 KGF/cm^2	√		
Stacked quantity		5 Layers	√		vertically

Pallet & Shipment

3.1.7.23 Container Specification

Stowing Type	Container	Quantity of products (sets) (Every container)	Quantity of Products (sets) (Every Pallet)	Quantity of pallet (sets) (Every Container)
With pallet	20'	1106(WW)	Pallet A: 98	Pallet A: 1
			Pallet B: 112	Pallet B: 9
		1032(JP)	Pallet A: 84	Pallet A: 4
			Pallet B: 116	Pallet B: 6
		900(EU)	Pallet A: 90	Pallet A: 10
			X	X
	40'	2226(WW)	Pallet A: 98	Pallet A: 17
			Pallet B: 112	Pallet B: 5
		2136(JP)	Pallet A: 84	Pallet A: 13

			Pallet B: 116	Pallet B: 9
		1890(EU)	Pallet A: 90	Pallet A: 21
			X	X
Without pallet	20'		X	X
			X	X
	40'		X	X
			X	X

3.1.7.24 Carton Specification

Product:

Net Weight (Kg)	Gross Weight (Kg)	Dimension w/o Base W*H*D (mm)	Dimension w/ Base W*H*D (mm)
2.96Kg	4.15 Kg	490.69*299.89*57 mm	490.69*370.74*163.9mm

Package:

Carton Interior Dimension (mm) L*W*H	Carton External Dimension (mm) L*W*H
541*108*350	551*118*370(WW) 553*120 *375(JP)

3.1.8 Certification

GL2055 Regulatory Request Form

RR No.: 20120104-RR-S003
Product Line: LCD
Regulatory Name: GL2050-B; GL2050-BA
Model Name: GL2055
Marketing Name: GL2055; GL2255A; GL2255M
Vendor: 佳世達科技股份有限公司.
Factory Name: Qisda(Suzhou) Co., Ltd)
Factory Address: No. 169 Zhujiang Road, New District, Suzhou, Jiangsu 215129, P.R. China(中國江蘇省蘇州市新區珠江路169號)
Subject: New Model
Basic Model:
Difference between additional and basic model:
Rating: 100-240V
Special Feature:
Glossy or Non-glossy Housing: Glossy
Input Connector: Dual (DVI+D-Sub)

Region	Country	Certification	Level	Apply by BenQ	Apply by Vendor	Sample Request	Document Type	Standard	BenQ Information & Request	Document provide		Remark
										Target Date	Actual Date	
BQA	Canada	IC			Y		Reports	ICES-003				
BQA	USA	FCC			Y		DOC;Reports	FCC CFR 47 Part 15 Subpart B				
BQA	USA	NRTL (US+Canada)			Y		Certificate	UL60950-1& CSA C22.2 No. 60950-1-07	For both US and Canada use.			
BQC	China	CCC			Y		Certificate;Printing Permission;Reports	GB4943, GB9254, GB17625.1	製造商: 明基電通有限公司			
BQC	China	China Energy Label	1級		Y		Certificate	GB 21520-				
BQE	EU	CE			Y		DOC;DOI;Reports	EN55022; EN55024				
BQE	EU	ErP			Y		Reports	2005/32/EC, 2009/125/EC, EC No 1275-2008 and its implementation measurements.				
BQE	EU	REACH			Y		Evidence	EC No. 1907/2006 & SVHC lists, No. 552/2009				
BQE	EU	WEEE			Y		Reports	2002/96/EC and its amendments				
BQE	Germany	Bauart			Y		Certificate	EN60950-1				
BQE	Germany	ISO9241-307			Y		Certificate	ISO9241-307				
BQE	Germany	MPRII			Y		Certificate	MPR II: MPR 1990: 8 / MPR1990: 10				
BQE	Russia	GOST		Y			Certificate	rOCT P MOK 60950-1, rOCT 26329-84, rOCT P 50948, rOCT P 51318.22, rOCT P 51317.3.26, rOCT P 51317.3.				
BQE	Ukraine	EMC DoC			Y		Certificate	IEC 60950-1				
BQE	Ukraine	UkrSEPRO			Y		Certificate	CISPR22; CISPR24; IEC60950-1				
BQL	Argentina	S Mark			Y		Certificate	IEC 60950-1				
BQL	Mexico	Mexico Energy Label		Y			Certificate	Law for Sustainable Energ	SI provide test data and cover page			
BQL	Mexico	NOM			Y		Certificate	IEC 60950-1				
BQP	Australia	C-Tick			Y		DOC;Reports	AS/NZS CISPR 22	Supplier code: N11444			
BQP	Japan	PC3R	2-stars	Y			Evidence	PC Green Label System				
BQP	Japan	VCCI			Y		Certificate;Reports	V-3/V-4				
BQP	Korea	e-Standby			Y		Reports	Ministry of Knowledge Economy Notification No. 2008-116				
BQP	Korea	KC			Y		Certificate	K60950-1, K00022 (CISPR22), K00024 (CISPR24)				
BQP	Saudi Arabia	SASO		Y			Certificate	IEC 60950-1				
BQP	Singapore	PSB			Y		Certificate	IEC 60950-1				
BQP	Taiwan	BSMI			Y		Authorization;Certificate;Reports	CNS14336; CNS13438				
BQP	Turkey	CE			Y		DOC;DOI;Reports	EN55022; EN55024				
International	CB Scheme	CB			Y		Certificate;Reports	IEC 60950-1				
International	International	Energy Star			Y		Certificate;Reports	ENERGY STAR Program Requirements for Displays				
International	International	RoHS (RoHS, China/Korea RoHS, J-MOSS)			Y		Evidence	2002/95/EC and its amendments				

3.2. Customer Acceptance

3.2.1. SCOPE

This document establishes the general workmanship standards and functional Acceptance criteria for LCD color monitor model **GL2055/GL2055A/GL2055M** Produced by BenQ Peripherals, Inc.

3.2.2. PURPOSE

The purpose of this publication is to define a procedure for inspection of the LCD monitor by means of a customer acceptance test, the method of evaluation of defects and rules for specifying acceptance levels.

3.2.3. APPLICATION

The "Customer Acceptance Criteria" is applicable to the inspection of the LCD monitor, completely packed and ready for dispatch to customers. Unless otherwise specified, the customer acceptance inspection should be conducted at manufacturer's site.

3.2.4. DEFINITION

The "Customer Acceptance Criteria" is the document defining the process of examining, testing or otherwise comparing the product with a given set of specified technical, esthetic and workmanship requirements leading to an evaluation of the "degree of fitness for use", including possible personal injury or property damage for the user of the product.

3.2.5. CLASSIFICATION OF DEFECTS

The defects are grouped into the following classes:

Critical defect

A critical defect is a defect that judgment and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product.

Major defect

A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the product for its intended purpose.

Minor defect

A minor defect is a defect that is not likely to reduce materially the usability of the product for its intended purpose, or is a departure from established standards having little bearing on the effective use of operation of the product.

3.2.6. CLASSIFICATION OF DEFECTIVES

A defective is a product which contains one or more defects. The defective will be classified into following classes:

Critical defective

A critical defective contains one or more critical and may also contain major and/or minor defects.

Major defective

A major defective contains one or more defects and may also contain minor defects but contains no critical defect.

Minor defective

A minor defective contains one or more minor defects but contains no critical and major defects.

3.2.7. EXPRESSION OF DEFECTIVES

$$\text{Percent of defects} = \frac{\text{Number of defects}}{\text{Number of products inspected}} \times 100\%$$

3.2.8. INSPECTION STANDARD

Unless otherwise specified, the inspection standard will be defined by MIL- STD-105E(ISO-2859), SINGLE SAMPLING PLAN. level II is in use all the time , inspection levels are normal ,reduce and tighten .

Acceptance Quality Level

When a critical defect is found, this must be reported immediately upon detection, the lot or batch shall be rejected and further shipments shall be held up pending instructions from the responsible person in relevant organization.

Major Defective: 0.4 AQL

Minor Defective: 1.50 AQL

3.2.9. GENERAL RULES

The inspection must be carried out by trained inspectors having good knowledge of the meaning of "fitness for use". The inspection must be based upon the documents concerning the completely assembled and packed product When more defects appear with the same cause only the most serious defect must be taken into account. Defects

found in accessories packed with the product as connecting cables, plugs, adapters and the like, and being inspected as a part of the complete product, must be included in the evaluation.

The evaluation must be within the limits of the product specification and, for not specified characteristics, be related to the design model, limit samples or judgment of a jury of experts.

3.2.10. TEST CONDITIONS

Unless otherwise prescribed, the test conditions are as follows:

. Nominal mains voltage

. Temperature: +5~+35℃

. Warm up time : 30minutes minimum .

. Visual inspection shall be down with the distance from eyes to the sample 35-50 cm .

. Display mode: Primary mode 1366*768

3.2.11. TEST EQUIPMENTS

1. PC with display adapter or other specific
   display adapter which is agreed upon by both parties
2. Test program by BenQ
3. Ruler
4. Power saving test tool
5. Minolta color analyzer (CA-110 or BM – 7)

3.2.12. VISUAL INSPECTION CRITERIA

1. PACKING
2. ACCESSORIES
3. APPEARANCE
4. AC POWER AND SIGNAL CABLE
5. INTERIOR OF THE PRODUCT

No	Description	Class
1	**Packing**	
1.1	Wrong packing material	Major
1.2	Carton damaged(over 6cm dia).wet, badly taped or stapled, product will not arrive in good condition at customer	Minor
1.3	Carton damaged(3cm to 6cm dia), badly taped or stapled , product will arrive in good condition at customer	Minor
1.4	Wrong marking of trade mark	Major

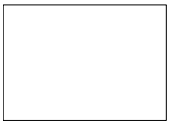
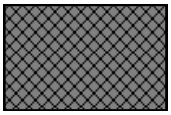
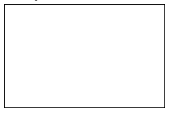
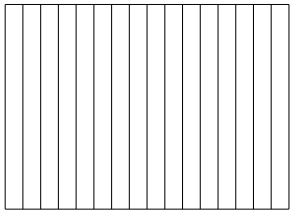
1.5	Wrong marking of model number	Major
1.6	Wrong serial # marking on carton	Major
1.7	Product wrongly placed in box (upside down)	Major
1.8	Broken polyfoam or PU foam	Major
1.9	Broken packing bag	Major
1.10	Wrong size or poor printing for artwork/character	Major
1.11	Bar-code wrong, missing, or damaged	Major
1.12	Label on box missing or damaged	Major
1.13	Strange object in the box	Major
1.14	Unit not corresponding to model stated on external label	Major
1.15	Superficial breaking 5 ~ 10 cm dia	Minor
2	**Accessories**	
2.1	Missing accessory parts	Major
2.2	Wrong Accessory parts	Major
3	**Appearance of product**	
3.1	Incorrect color of cabinet	Major
3.2	Incorrect color of tilt/swivel base	Major
3.3	Wrong logo or name plate	Major
3.4	Poor print of logo or name plate	Major
3.5	Label on product Wrong or missing	Major
3.6	Scratched or dirty but legible spec. label	Minor
3.7	GAP between LCD and front bezel is over 1.5 mm	Major
3.8	Dot/area discolor over 1mm dia. in front or over 2mm dia. in other areas	Major
3.9	Cabinet warped, sagged or bulging ＞0.5% of surface length	Major
3.10	Cabinet warped, sagged or bulging noticeable but ＜0.5% of surface length	Minor
3.11	Sharp stud or edge, which can cause damage not safe	Major
3.12	Finishing of piece parts will not arrived in good condition at the customer	Major
3.13	Step (between real cover and bezel) ＞-0.3mm , < 0.5mm	Minor
3.14	Step (between real cover and bezel) ＞0.5mm	Major
3.15	Wiring or fixing cord comes out of cabinet or jammed	Major
3.16	Auxiliary material used during production not removed	Major
3.17	Cabinet parts come loose during normal handling, not safe	Critical
3.18	Cabinet parts come loose during normal handling, but safe	Major
3.19	Tilt/swivel too flexible/not working	Major
3.20	Tilt/swivel stiff	Minor
3.21	Dirty front bezel and housing can’t remove	Major
3.22	Dirty front bezel and housing removable easily	Minor
3.20	Sticker or loose user control switch which will not function correctly	Major
3.21	Missing knob or switch, not safe	Critical
3.23	Missing knob or switch, but safe	Major
3.24	Poor functional user controls in mechanical	Major
3.25	Unreadable printing of user controls label	Major
3.26	Rubber foot missing	Major
3.27	LED wrong material or missing	Major
3.28	Gap between bezel and button >0.4	Major
3.29	Wrong S/N between spec. label and monitor display	Major
4	**AC power and signal cable**	
4.1	AC power or connector not correct or damaged, not safe	Critical
4.2	AC power or connector not correct or damaged, but safe	Major
4.3	Signal cable contact pin dirty	Minor
4.4	Signal cable plug dirty or surface damaged, but safe	Minor

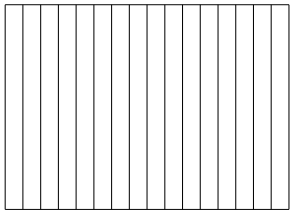
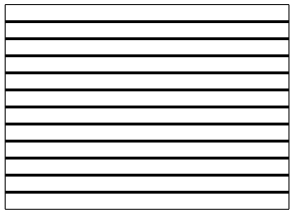
4.5	Cable crack	Major
4.6	Cable scratch (wire not exposed), or dirty	Major
4.7	AC-DC adapter no function	Minor
4.8	Signal cable contact pin dirty	Major
5	**Interior of the product**	
5.1	Use Non-QVL (Qualify vendor list)component	Major
5.2	Wrong parts, broken component, but safe	Major
5.3	Foreign material	
	Conductive (Has potential to short circuit)	Major
	Non-conductive (Moveable)	Minor
5.4	Missing hardware, component or screw, stripped screw	Major
5.5	Loose hardware/screw or insufficient torque	Major
5.6	Poor wire routing, which is no concerned on EMI	Minor
5.7	Cold soldering/loose connections (Electrical)	Major
5.8	Wires and mechanical structure do not meet UL/CSA or TUV	Critical
5.9	Wrong parts, broken component, not safe	Critical
5.10	Component burn	Critical

3.2.13. OPERATIONAL INSPECTION CRITERIA

1. TEST PATTERN
2. SPECIFICATIONS
3. OPERATIONAL INSPECTION CRITERIA

3.2.13.1. List of test pattern

KEY	PATTERN	TEST ITEM
A	FULL WHITE 	H - Size , V – Size Viewing Angle Light Output Impurity, Spot check Contrast Ratio Brightness adjust Range
E	DARK 	Background, Spot check
F	FULL W , R , G , B 	Impurity, Spot check CIE Coordinate check
G	256 COLORS 	Color Check

H	16 GREY 	Gray Check
H	Black/White stripe pattern 	Electric characteristics

3.2.14. PANEL INSPECTION CRITERIA

Panel 料号	**Panel P/N**	**AUO M200RTN01.0**
机种	Model Name	GL2055 / G2055A/GL2055M
廠商	Panel maker	AUO
Bright Dot 亮点	Single(单点)	≦0 Dots
Dark Dot 暗点	Single(单点)	≦5 Dots
Density 密度	B-Dot (Distance between two Bright Dots, 亮点距离)	Not allowed
	D-Dot (Distance between two Dark Dots, 暗点距离)	15mm => ≧15mm（增加≧）
	B-D Dot (Distance between Bright and Dark Dot, 亮暗点距离)	Not allowed
Total Dots	亮点+暗点	≦5Dots

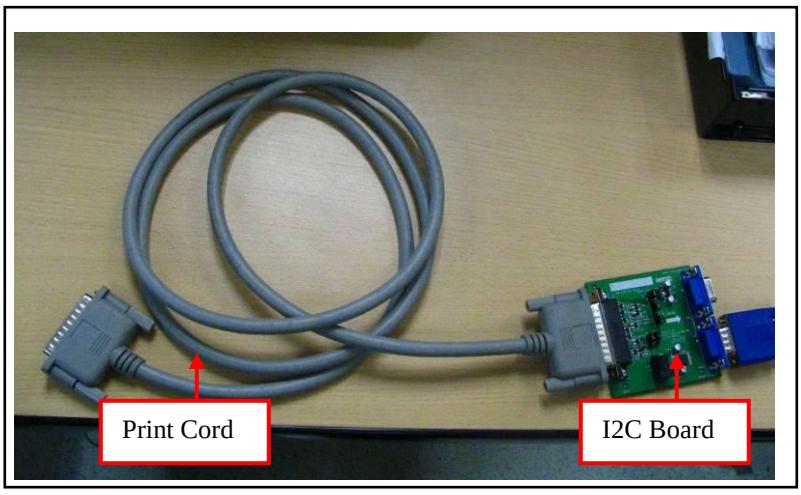
4. Level 1 Cosmetic / Appearance / Alignment Service

4.1. Software / Firmware Upgrade Process

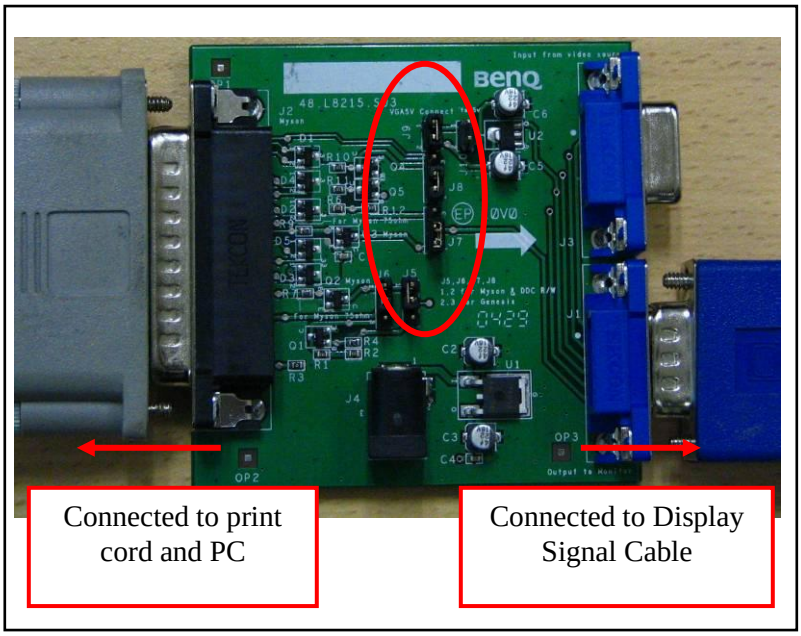
(Only for GL2055A)

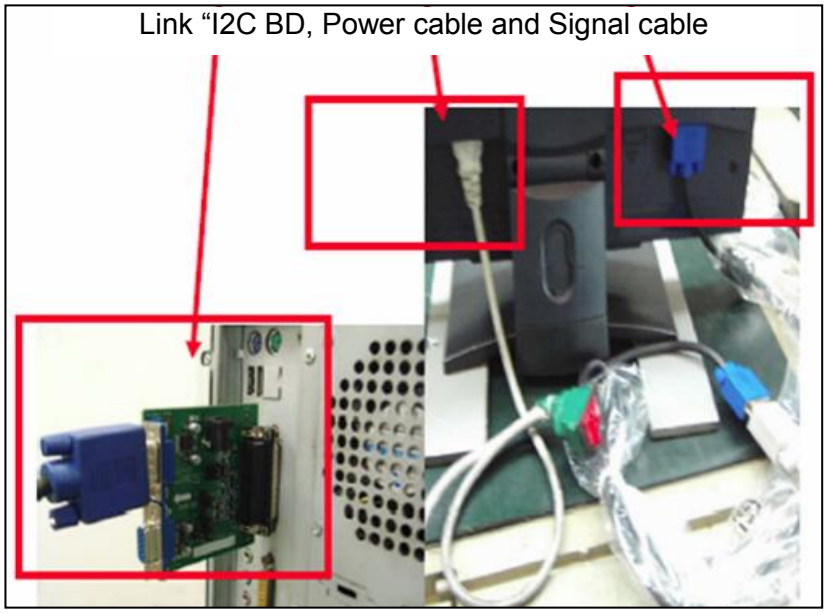
4.1.1 Hardware Requirement:

1. I2C board x 1 (a.Print Board b. I2C Board)
2. DSUB VGA cables x 2
3. Printer cable (with one male connector and another female connector) x 1.
4. PC or Notebook with parallel (printer) port x1.



Check the Jumpers on the I2C circuit board (make sure J5/J6/J7/J8 are set at Pin 1 & Pin 2 short)



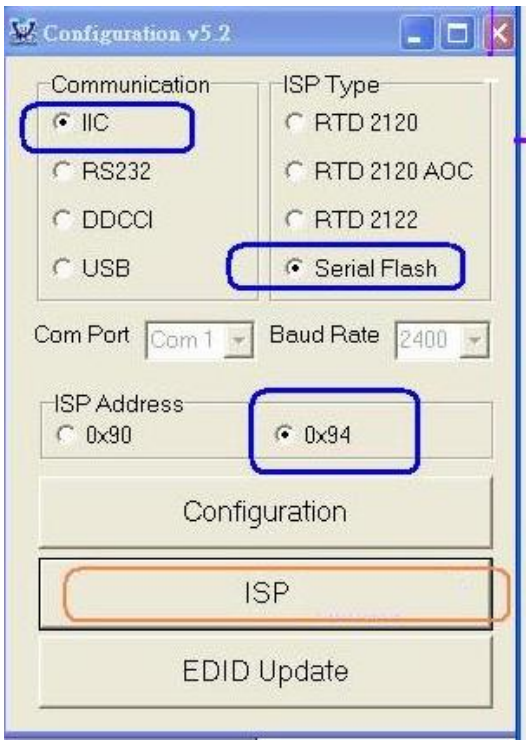


4.1.2 Software prepare

Step 1:
Un-zip Port95nt and install into your computer.

Step 2:
Un-zip ISP application tool (**RTDTool)**

Step 3:
Choose “ IIC”, “Serial Flash” and “0x94”. Then, press “ISP”



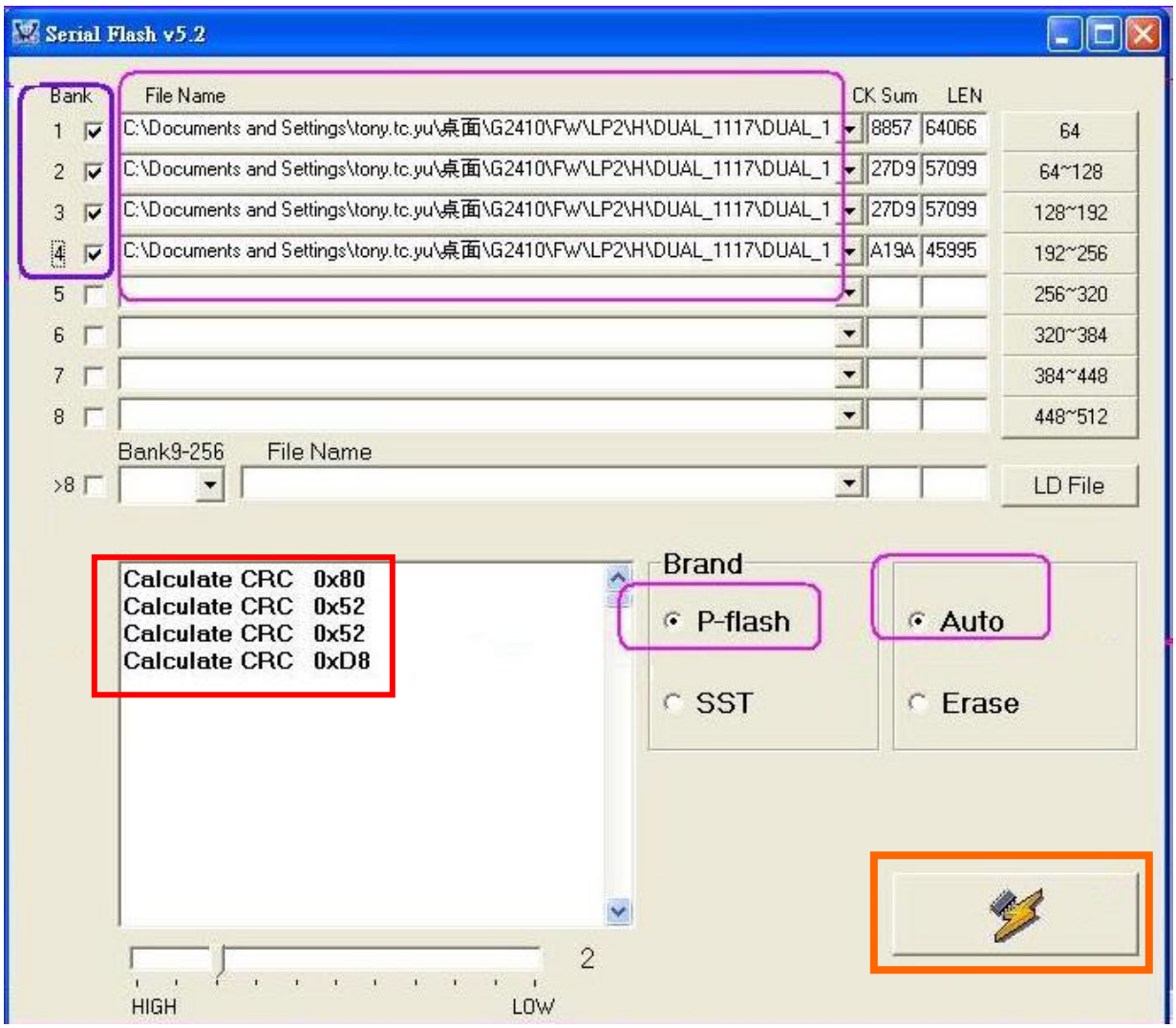
Step 4: Click the “Bank” and Find the F/W

1. xxx. H00
2. xxx.H01
3. xxx.H02
4. xxxEXT.Hex

Step5: Choose “P-Flash” and “Auto”

Step6: Press  to run the program

Step7: Check result, If the words showed in red, need to run the program again



Note: you can change program speed bar to meet your equipment speed if program firmware fail.

(Only for GL2055/GL2055M)

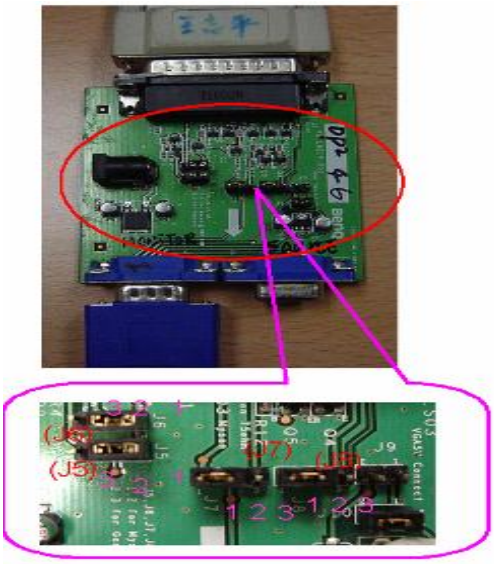
4.1.3 Hardware Requirement:

Step 1: Prepare PC with 2K or XP system, printer port cable x1 and D-sub cable x1

Step 2: Prepare Qisda ISP board and setup jumper as below. Pin 1 &2 of J5,J6,J7,J8 are for Firmware Upgrading. Please Setup the Jumper as below photo shows.

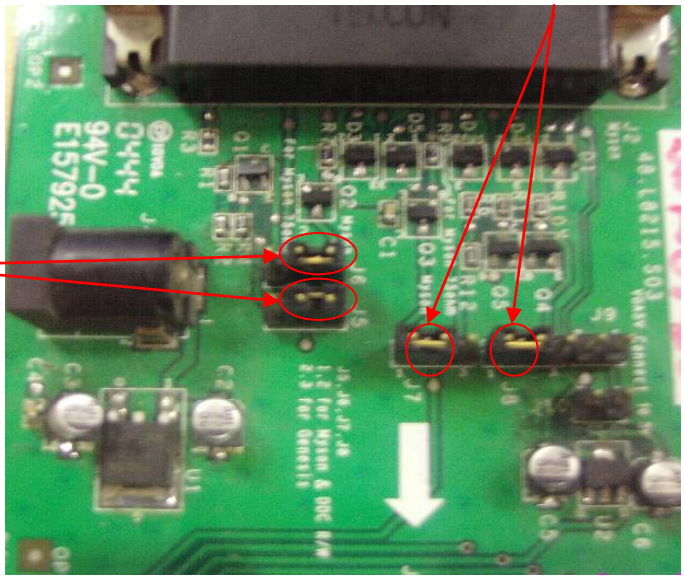
Short pin1 and pin2 at J5,J6,J7,J8

.



Jump Setting for

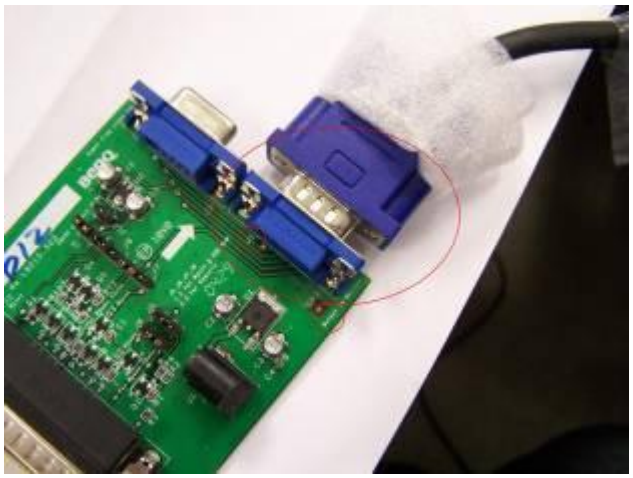
Jump Setting for



Step 3:

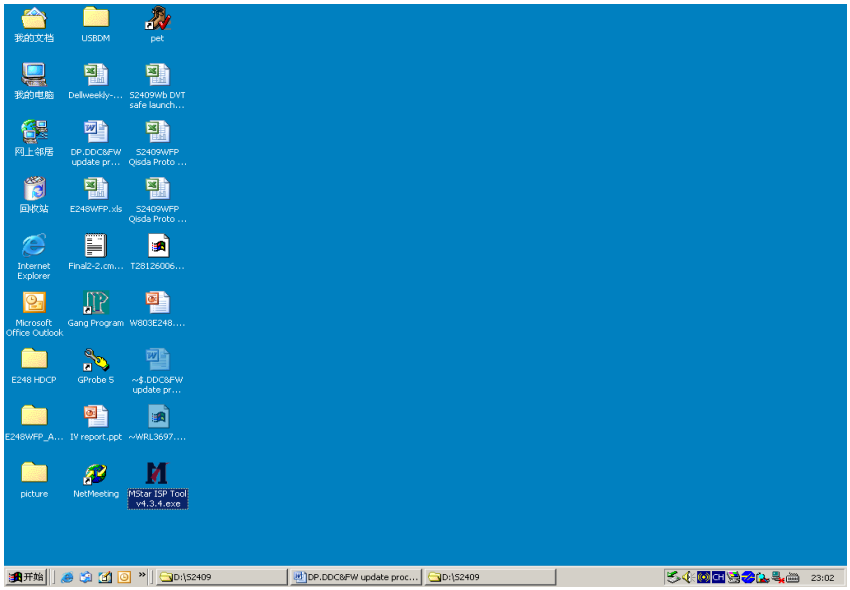
1. Connect printer port cable between PC LPT1 and Qisda ISP board
   Then connect signal cable between Qisda ISP board (position 1) and monitor.
2. Power on the monitor.

a. Connect the Printer Cable to the Printer Connector.
b. Connect the other side to the Board
c. Connect the signal cable to Board between Qisda ISP board (position 1) and monitor.

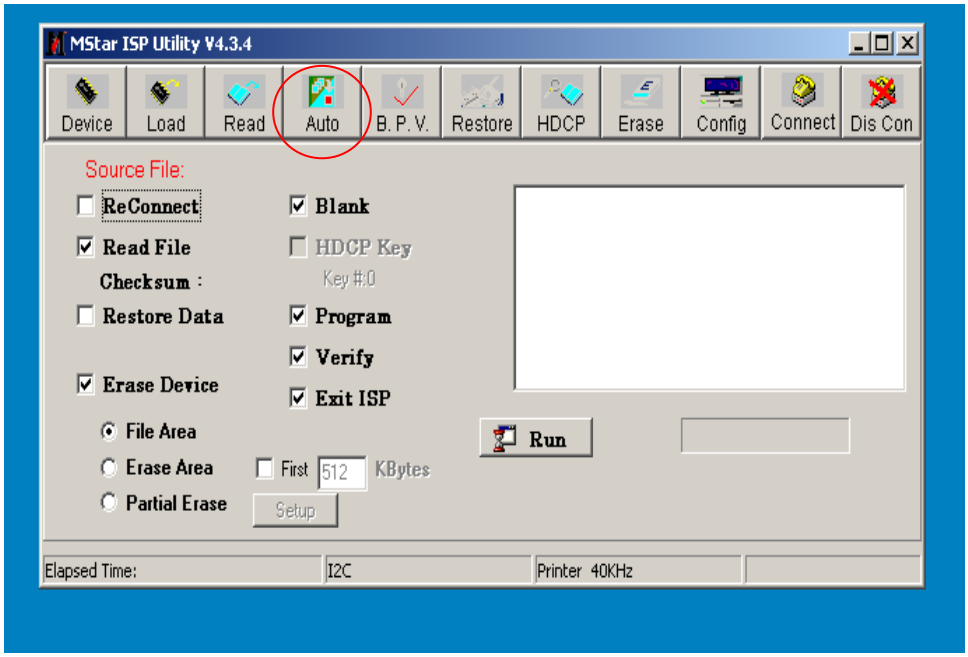


4.1.4 Software prepare

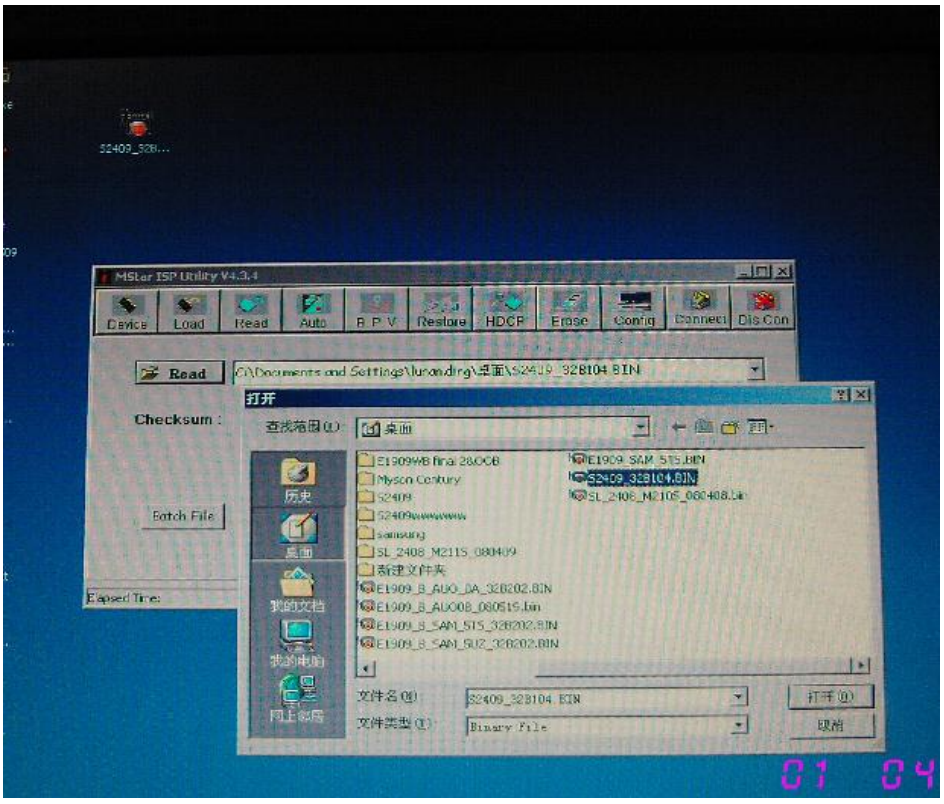
Step 1: Un-zip Port95nt and install into your computer.
Step 2: Un-zip **MStarISPToolv4.3.4.zip ISP Tool**
Step 3: Run Program MStarISPToolv4.3.4.exe (refer to below Picture)



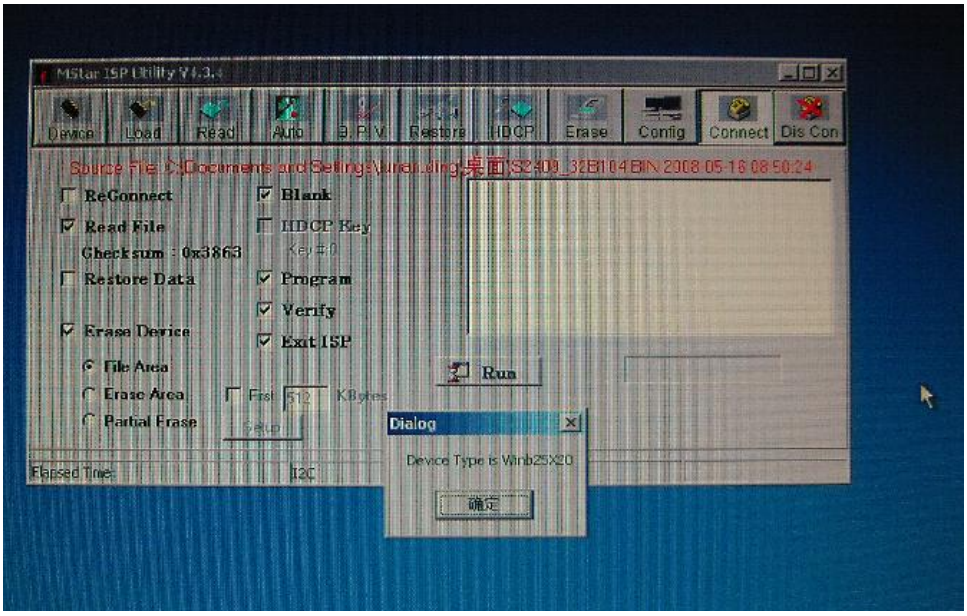
Step 4: Program Setting
Click the button ‘Auto’, to set the ISP tool as bellow:



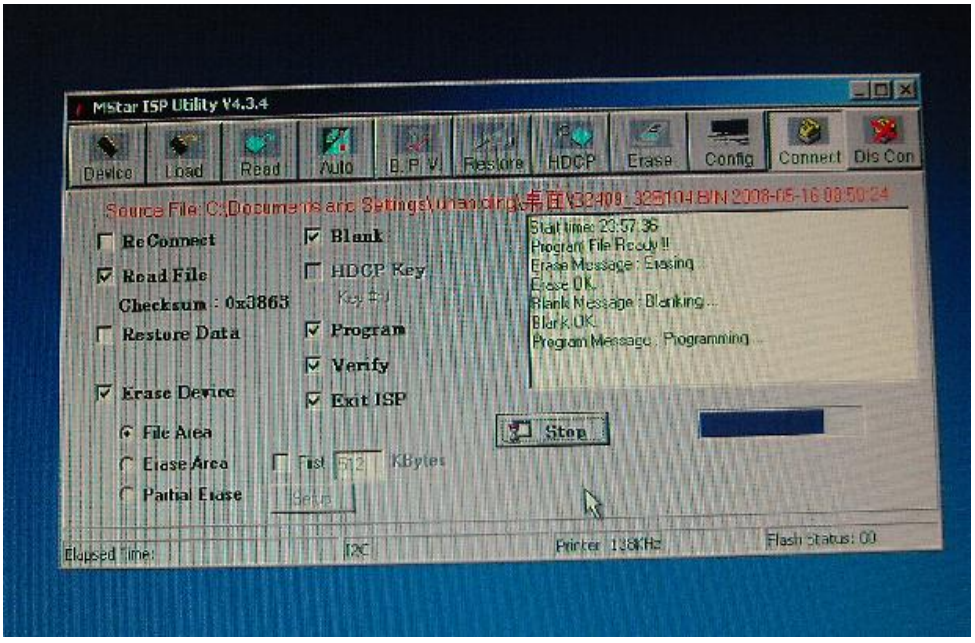
Step 5: Click the button “Read” to open the firmware that will be ISP

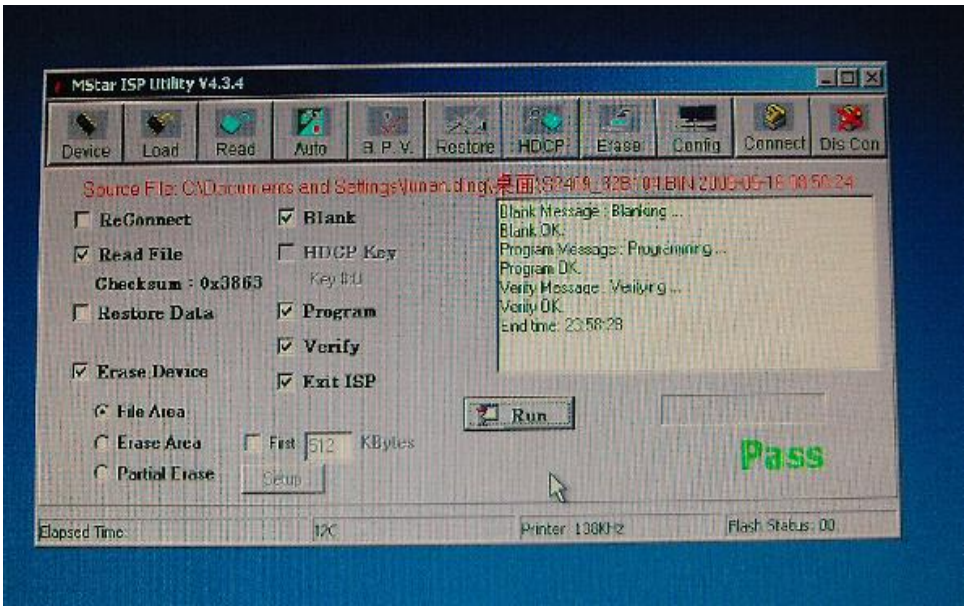


Step6: Click the button “Connect”, one cue “Device Type is xxxx” will show as bellow. If not , check connect again:



Step7: Click the button “Run” to continue the programming. If the ISP process is successful, it will show “Pass”

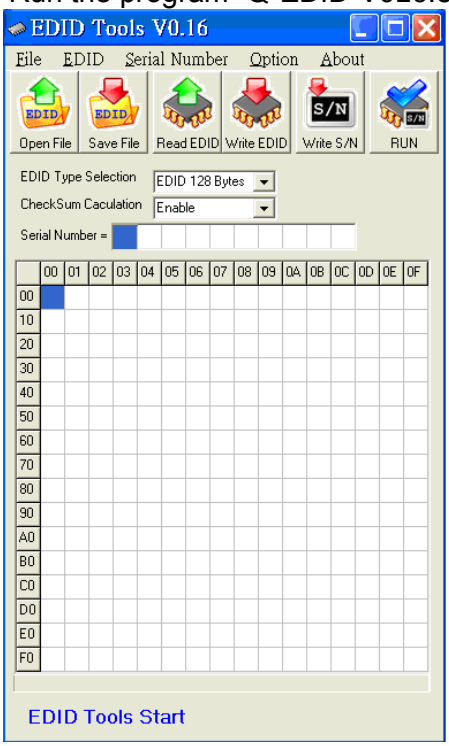




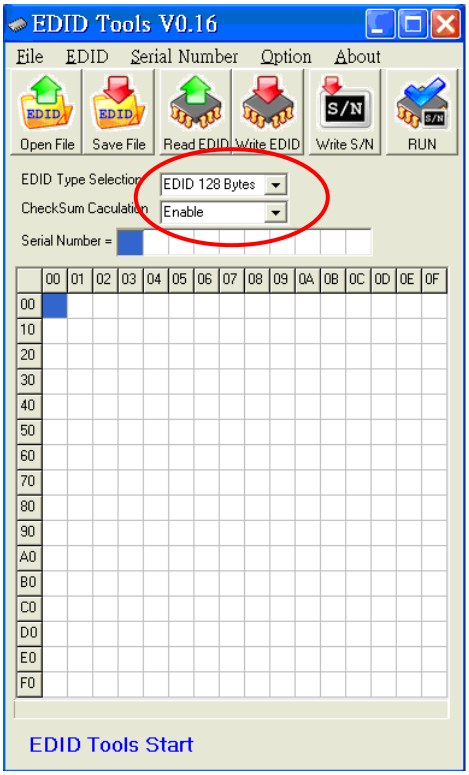
Step8: AC off/on, and turn on Factory Menu, and check F/W version

4.1.5 EDID Upgrade Procedure

Step 1: Run the program “Q-EDID-V016.exe”, when the UI popped up

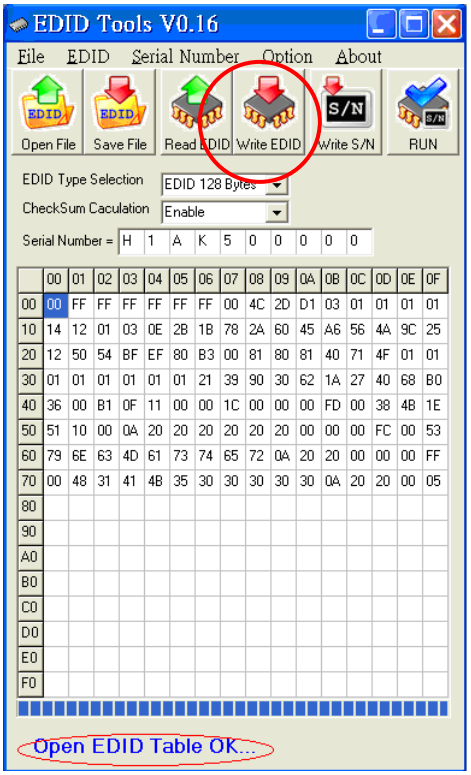


Note: If “VGA” choose 128bytes, and “HDMI” choose 256bytes

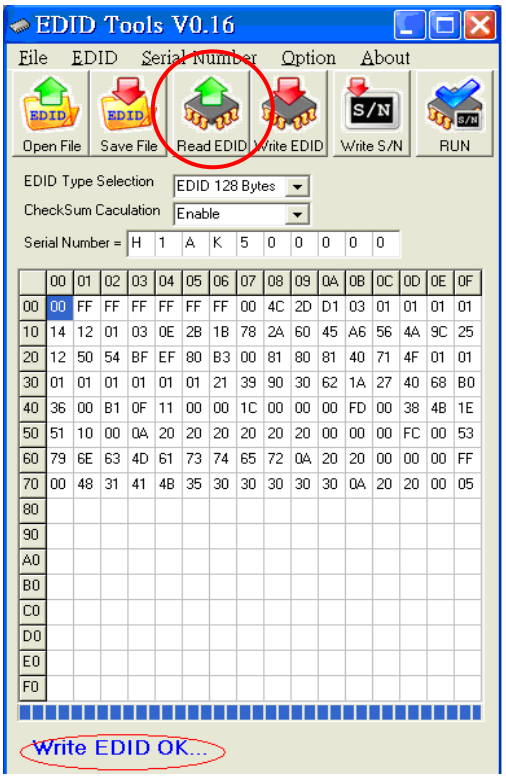


Step 2: Click “Open File” and select “VGA” or “HDMI” EDID file

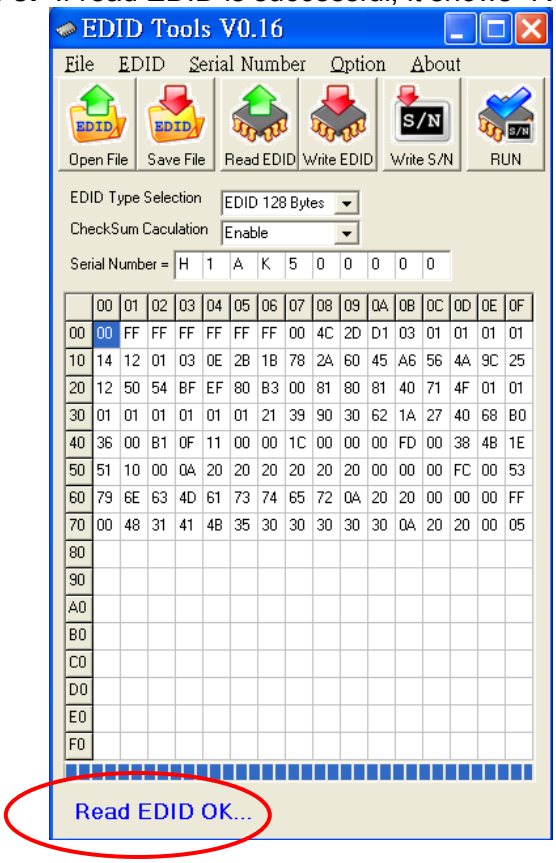
Step 3: If load file is successful, it shows “Open EDID Table OK.”
And then, Click “Write EDID” button to update EDID



Step 4: If write EDID is successful, it shows ”Write EDID OK …”
And then, click “Read EDID” button to check if successful or not.



Step 5: If read EDID is successful, it shows” Read EDID OK …”



4.2. Alignment procedure (for function adjustment)

A. Preparation:

1. Setup input timing ICL-605 (800x600@60Hz), Pattern: 5-Mosaic.
2. Setup unit and keep it warm up at least 30 minutes.

B. Timing adjustment:

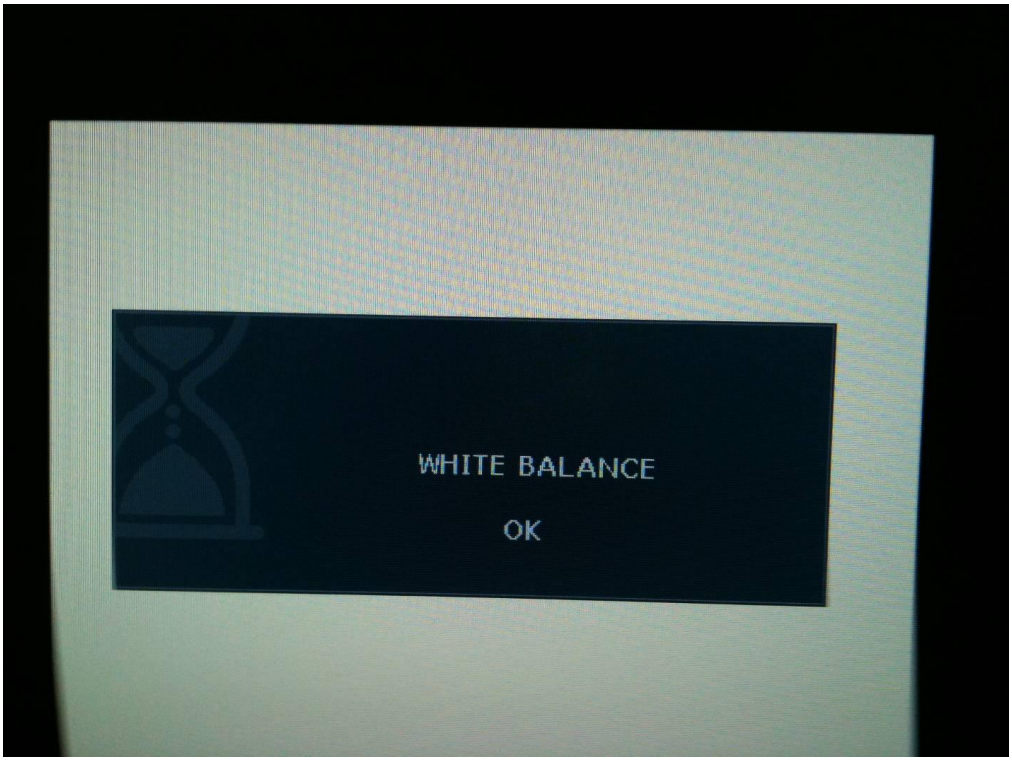
1. Enter factory setting area (press “ENTER”, “MENU” and then press “SOFTPOWER”).
2. Check the settings to following values:

   Contrast = 50
   Brightness = 100
   Color = User Mode
   Senseye mode = Standard
   Language = English
   Burn In =ON

   Then, turn off the monitor power.
3. Turn on power enter user area.

C. Color balance adjustment:

1. Enter factory setting area (press “ENTER”, “MENU” and then press “SOFTPOWER”).
2. Setup input timings (800x600@60Hz), Pattern: 5-Mosaic.
3. Setup Color mode “User Mode”.
4. Press “I-KEY”(or Left key directly), and then OSD will show “White Balance” item and then press “ENTER” button to do auto color.



D. Color adjustment:

1. Setup input timing ICL-605, white pattern.
2. Confirm auto color adjustment had already done.
3. Measure color temperature by Minolta CA-110 (or equivalent equipment).
4. Check the color temperature Bluish, Reddish & Normal. The color temperature specification as follows:

Color mode	Color temperature	x	Y	
Normal	6500k	0.313±0.015	0.329±0.015	Min 150cd/m^2
Bluish	9300k	0.283±0.015	0.297±0.015	Min 120 cd/m^2
Reddish	5800k	0.326±0.015	0.342±0.015	Min 150 cd/m^2
User Mode	Panel default color temp.			Min 150 cd/m^2
sRGB	6500k (Gamma=2.2±0.2)	0.313±0.015	0.329±0.015	160 ± 20 cd/m^2

5. Setup input timing , 32 -Gray pattern.
   To check if there are any abnormal display problems of preset timing modes .
6. Checking if the picture is no good, reject this monitor.
7. To check the power consumption by disabling “burn-in mode” setting
8. To clear user data and program complete DDC data to monitor by IIC bus communication.

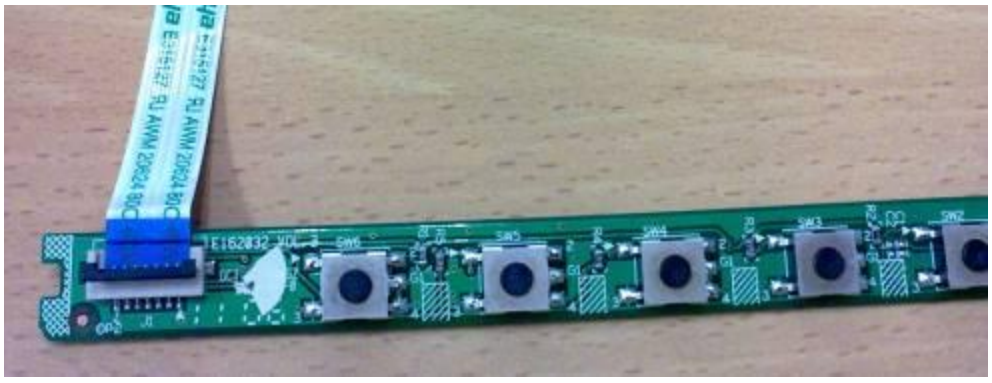
E. Writing EDID file:

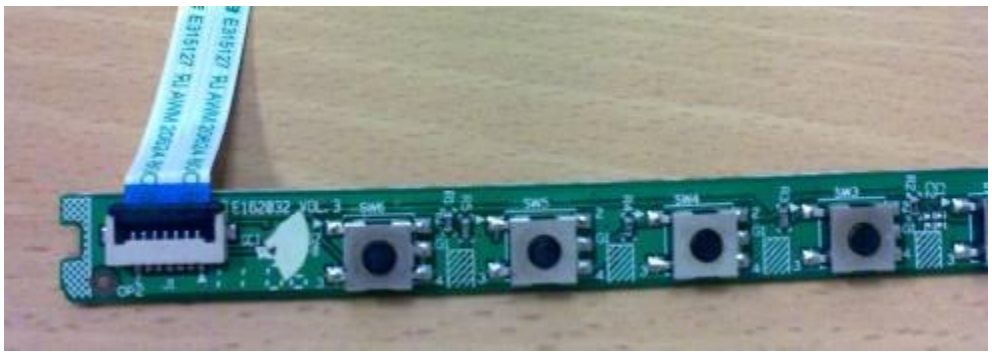
1. Setup a PC with DDC card.
2. Connect PC to monitor with a D-sub signal cable.
3. Please refer to the Q212 for the correct EDID file.
4. Runs the writing program to write the EDID file into EEPROM.
5. Read EEPROM data and confirm it to match with the Q212 document definition.

F. Wire Dressing

PCBA FFC cable note

CTRL BD and wire assembly

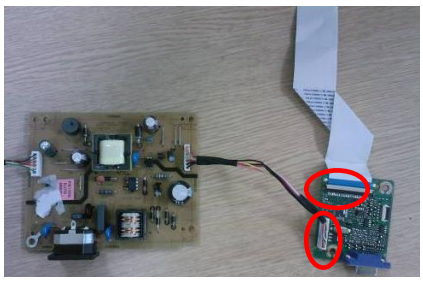




Assembly note

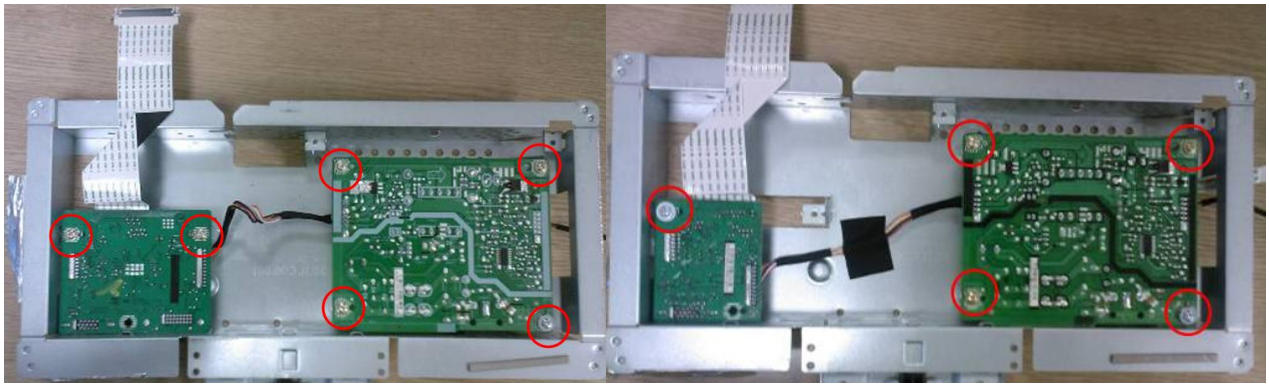
(Only for GL2055/ GL2055A)
Step 1: Insert wire from PWR-BD and LVDS on I/F-BD:


GL2055 I/F-BD


GL2250A I/F-BD

Step 2: Put PNL wire to PWR BD hole of SHD:

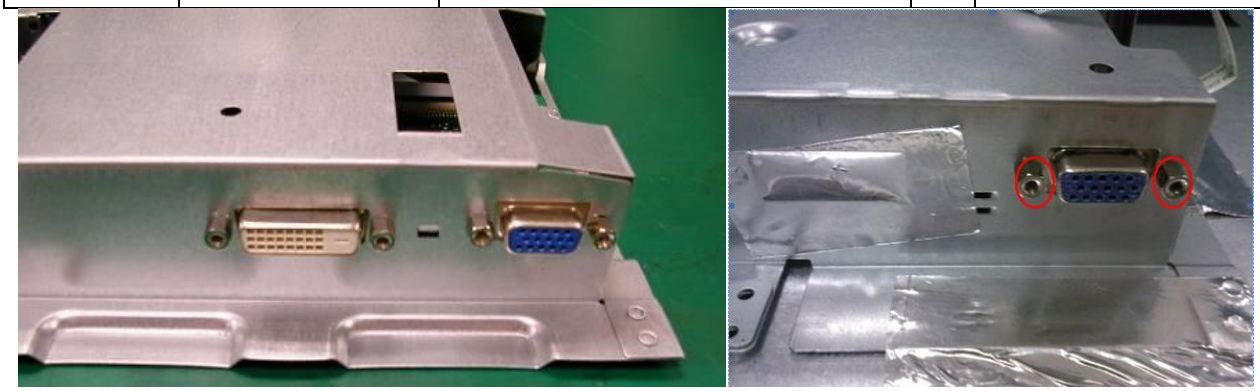

Step 3: Fasten PWR BD and IF BD by screw



GL2055 GL2055A

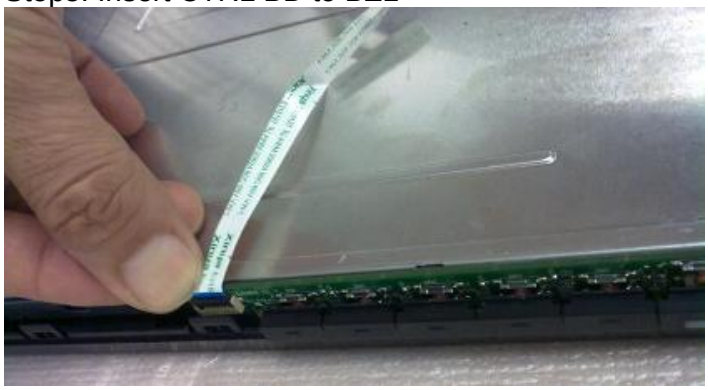
Step4: Fasten D-SUB with hexagon screws and fasten DP with screw

GL2055	8F.205B4.019	SCRW MACH STEEL HEX #4-40 NI	4	DVI*2 D-SUB*2
GL2055A	8F.205B4.019	SCRW MACH STEEL HEX #4-40 NI	2	D-SUB*2

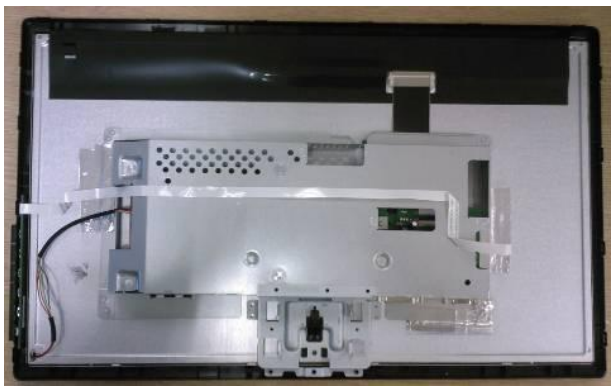


GL2055 GL2055A

Step5: Insert CTRL BD to BZL



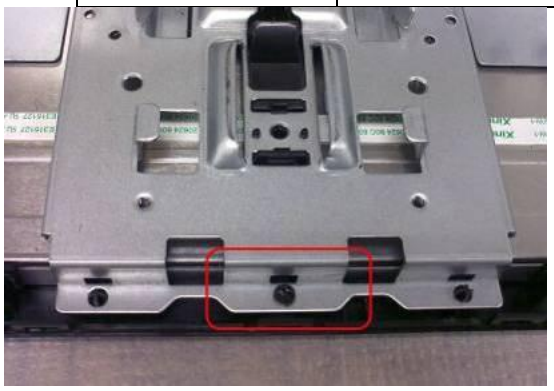
Step6: Put ASSY SHD on Panel and connect FFC wire、LVDS wire、panel wire

Step7: Put in Tape adhesive to panel wire

Step8: Assemble BZL and ASSY SHD by Screw

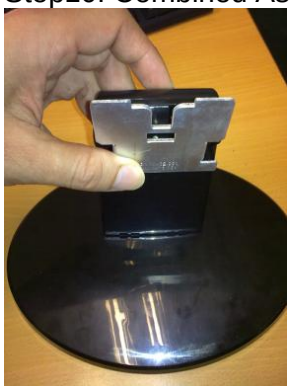
8F..00607.8R0	SCRW TAP FPH M3*8L(5/0.8) B-ZN	1	FC/BKT_hinge*1



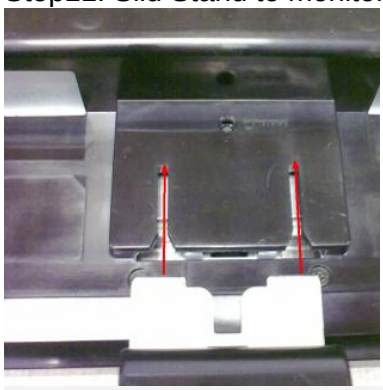
Step9: Covering the Rear Cover and Fasten by screw

8F.8A354.6R0	SCRW M FPH M3*6L(6.5/1.2) B-ZN	2	HINGE/RC*2

Step10: Combined Assy Base and Assy CLMN

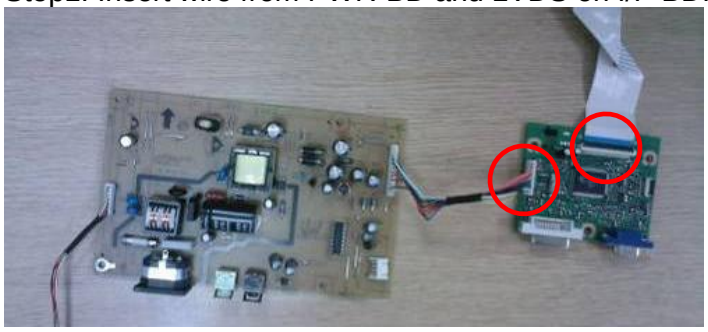


Step11: Slid Stand to monitor slider hole



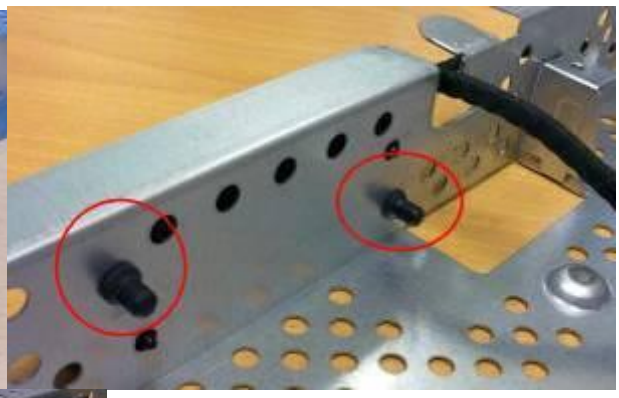
(Only for GL2055M)

Step1: Insert wire from PWR-BD and LVDS on I/F-BD:

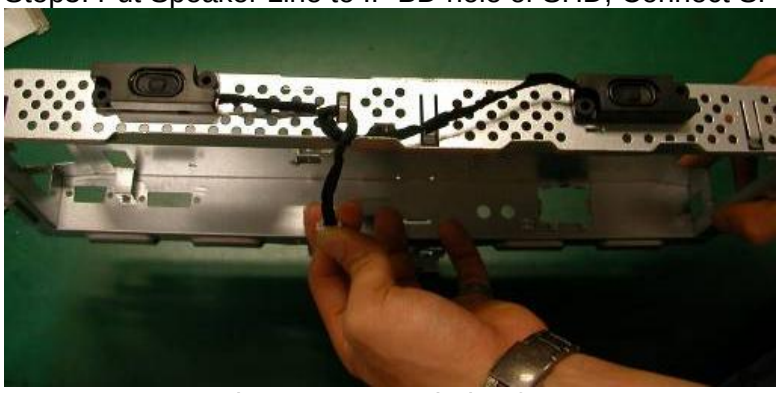


GL2055M I/F-BD

Step2: Follow the mark symbol and Insert Speaker to SHD

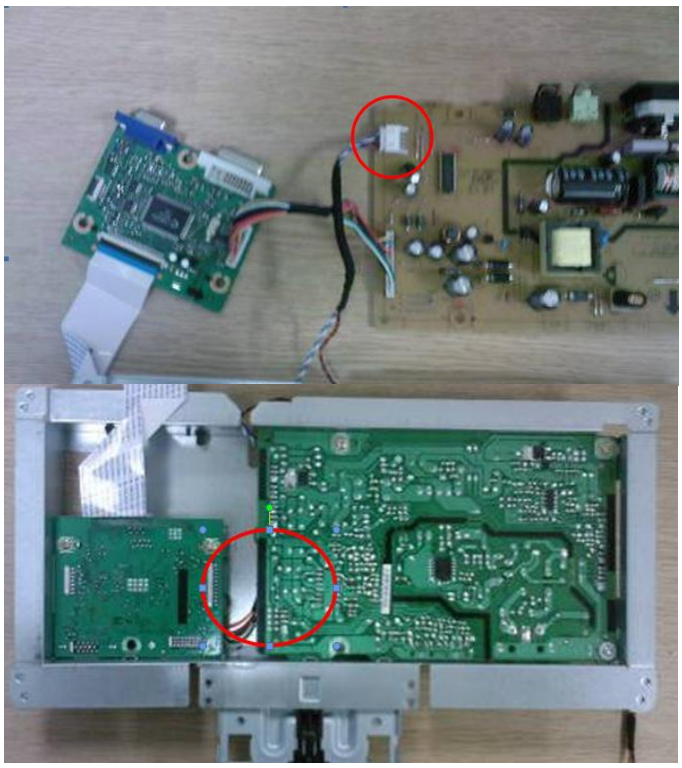




Step3: Put Speaker Line to IF BD hole of SHD; Connect SPS BD and IF BD By wire

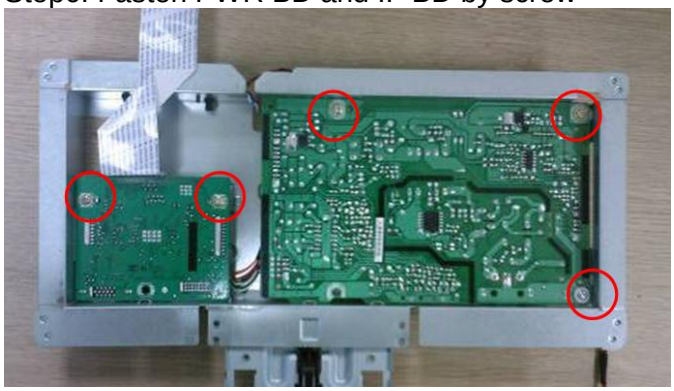


Step4: Put PNL wire to PWR BD hole of SHD:

Step5: Connect SPS BD and Speaker By wire

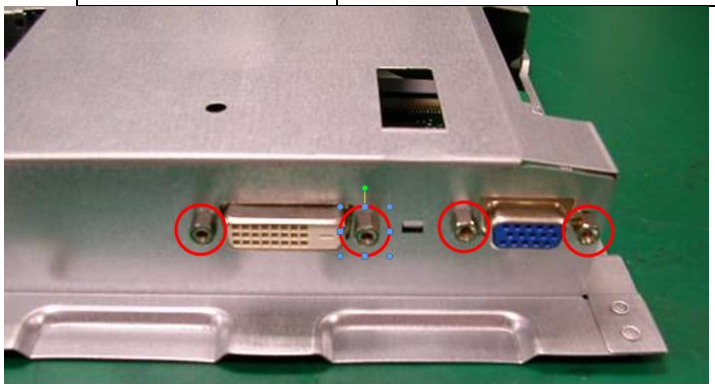


Step6: Fasten PWR BD and IF BD by screw

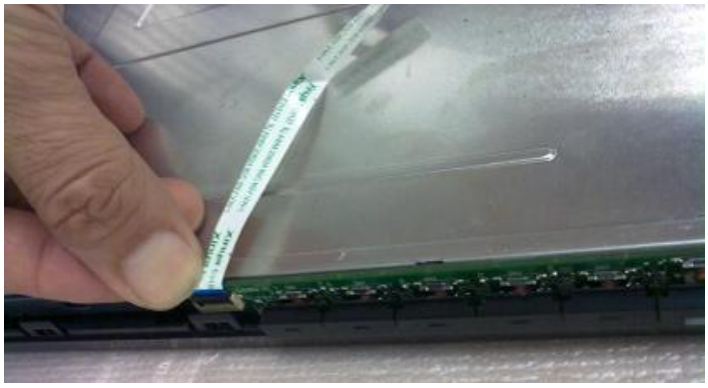


Step7: Fasten DVI、D-SUB with hexagon screws and fasten DP with srew

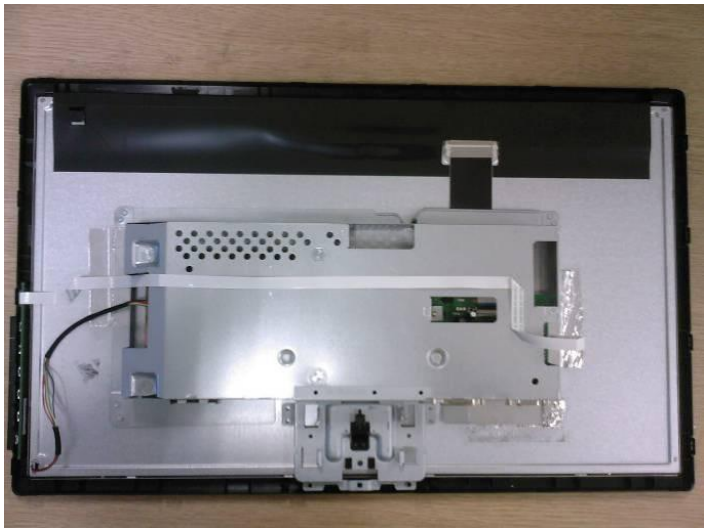
8F.205B4.019	SCRW MACH STEEL HEX #4-40 NI	4	DVI*2 D-SUB*2



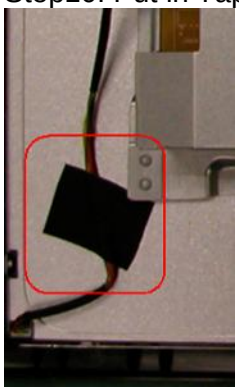
Step8: Insert CTRL BD to BZL



Step9: Put ASSY SHD on Panel and connect FFC wire、LVDS wire、panel wire

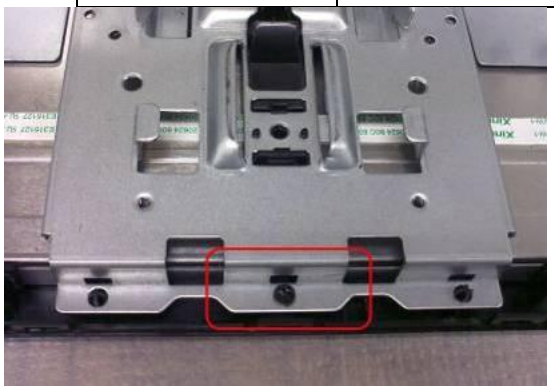


Step10: Put in Tape adhesive to panel wire



Step11: Assemble BZL and ASSY SHD by Screw

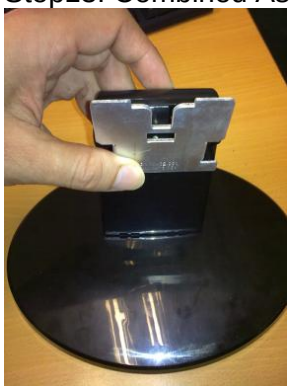
8F..00607.8R0	SCRW TAP FPH M3*8L(5/0.8) B-ZN	1	FC/BKT_hinge*1



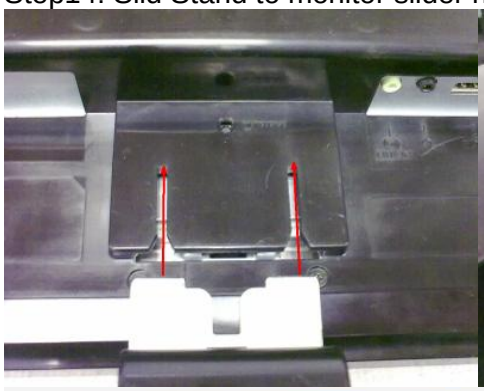
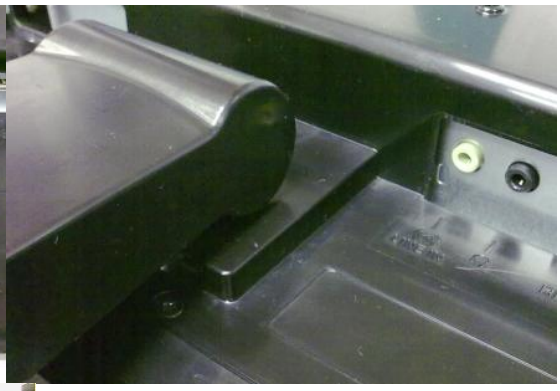
Step12: Covering the Rear Cover and Fasten by screw

8F.8A354.6R0	SCRW M FPH M3*6L(6.5/1.2) B-ZN	2	HINGE/RC*2


Step13: Combined Assy Base and Assy CLMN

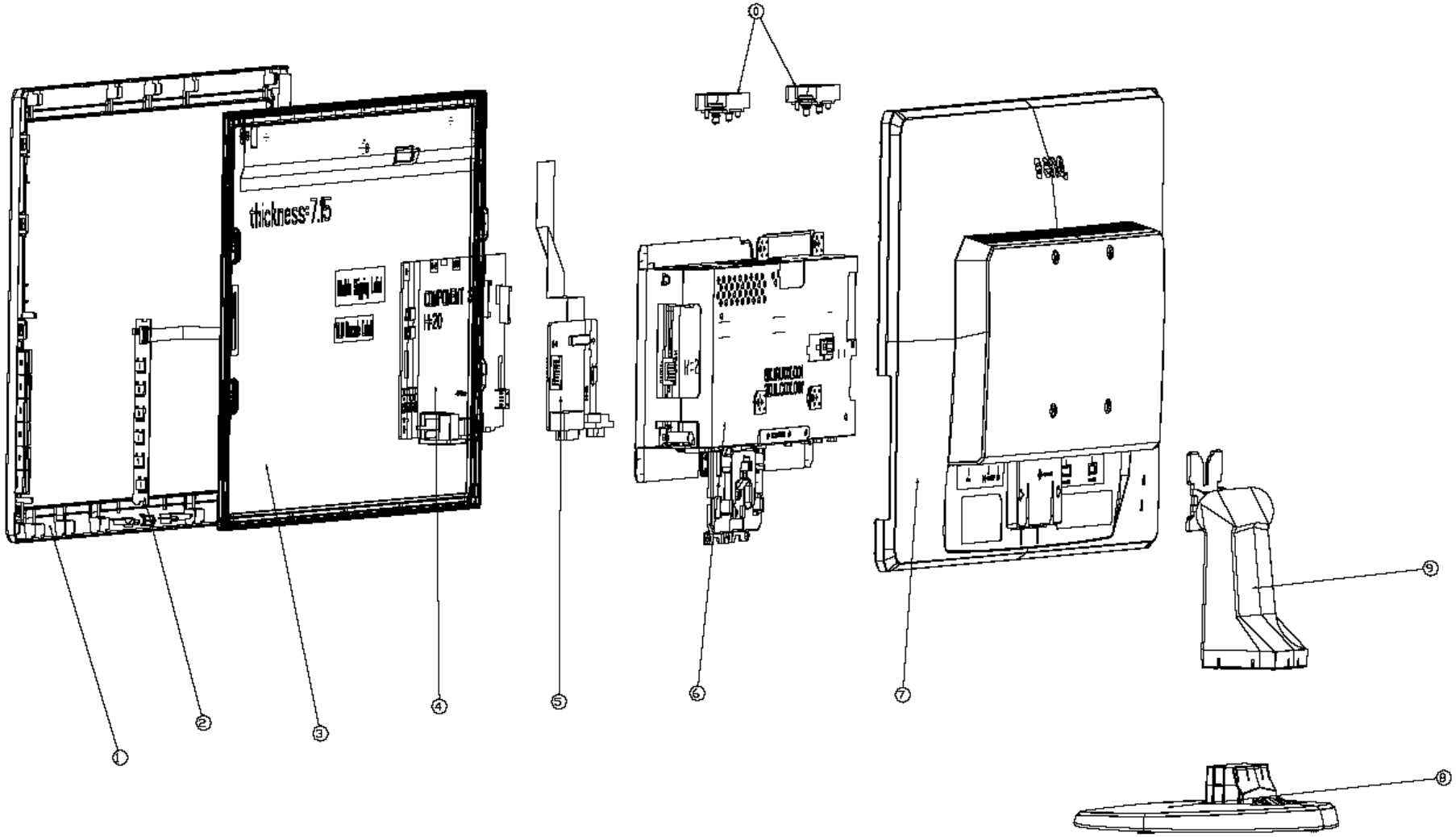


Step14: Slid Stand to monitor slider hole


5. Level 2 Disassembly /Assembly Circuit Board and Standard Parts Replacement

5.1. Exploded View



GL2055

Item	PN	Discription	Q'ty
1	6K.1RU01.0XX	Assy FC GL2055	1
2	5E.1KV03.001	PCBA CTRL BD GL2055	1
3	5F.LU1B0.071	LCDM20 M200RTN01.0 Z/G	1
4	5E.1RU02.001	PCBA SPS BD GL2055	1
5	5E.1RU01.001	PCBA I/F BD GL2055	1
6	6K.1RU06.001	ASSY SHD GL2055	1
7	6K.1RU03.001	ASSY RC GL2055	1
8	6K.1LC04.001	ASSY BASE GL2055	1
9	6K.1LC17.001	ASSY CLMN GL2055	1
10	2C.411V0.081	SPK*2 1.5W 8OHM 160/250MM	1

* This Service BOM is subject to change. Please check it on eSupport and SPO system before service parts order release

5.2. Disassembly /Assembly

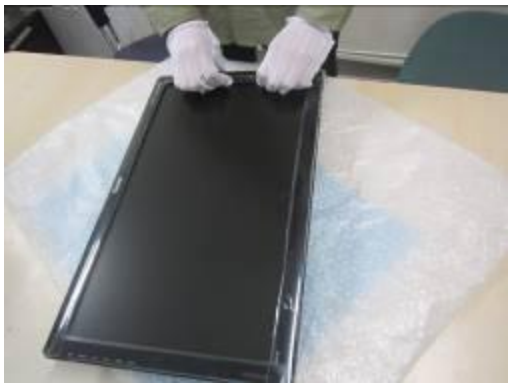
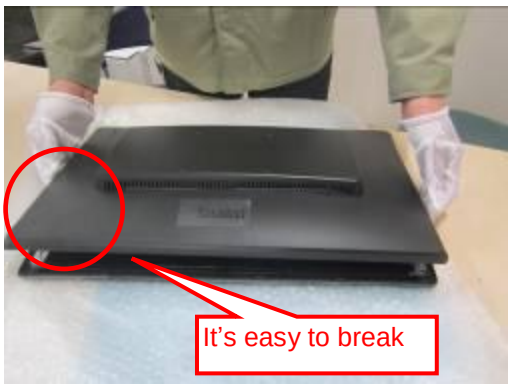
5.2.1 Disassembly SOP

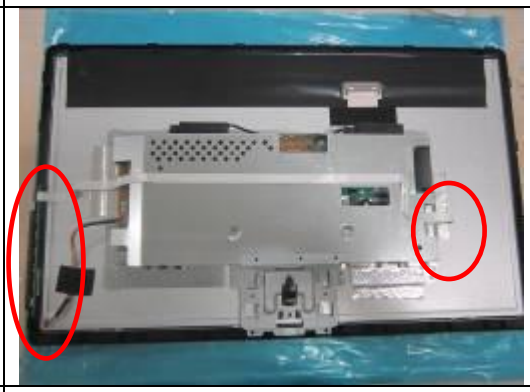
Preparation before disassemble

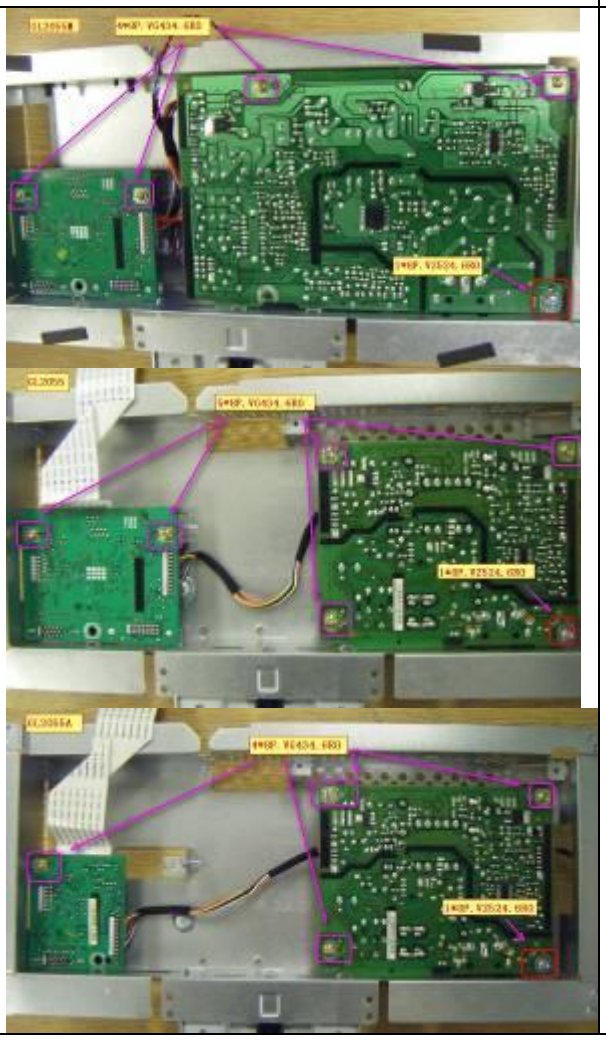
1. Clean the room for disassemble
2. Identify the area for monitor
3. Check the position that the monitors be placed and the quantity of the monitor, prepare the area for material flow; according to the actual condition plan the disassemble layout
4. Prepare the implement, equipments and materials as bellow:

1) Press-fixture
2) Working table
3) Screw-driver
4) Knife*1
5) Glove
6) Cleaning cloth
7) ESD protection

item	picture	Operation	Tool	Notes
1		Press the release button with a tool and disassemble the stand		
2		Disassembly 2 screws,	Screw-driver	

3	   	Disassembly the bezel from the monitor, notice the disassembly order : 1.Top (1) parts of bezel 2. Left (2) parts of bezel 3. Right (3) parts of bezel 4. Bottom (4) parts of bezel		

4		Turn over the monitor, dismantle the Rear cover from the monitor.		
5		Take out the control board FFC wire. Disassemble the control board		
6		Tear the tapes Remove the LAMP wire, Remove the FFC cable.		
7		Unlock the screw on the BZL.	Screw-driver	

8		Unlock 2pcs screws, Take the main-SHD off the BZL	Screw-driver	
9		Then take the panel off the BZL.		
10		Unlock screws	Screw-driver	

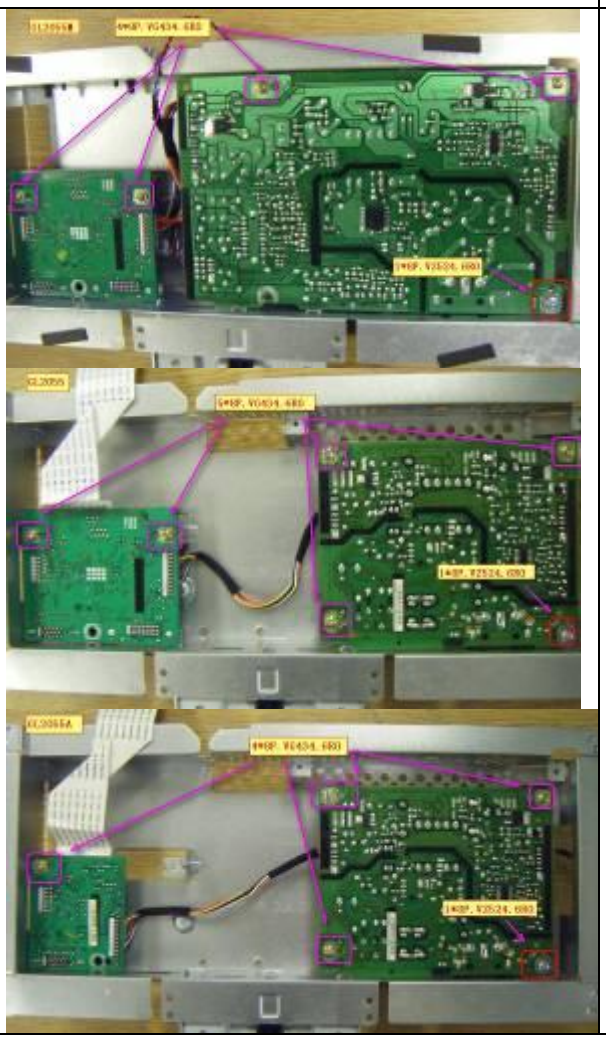
11		Disassemble the PCBA from the Main-SHD. Take out the speaker wire Disassemble the I/F and the Power Board，then take out the FFC LVDS		
12		Disassemble the speakers (Only for GL2055M)	Nipper pliers	

*The assembly is in the reverse order of disassembly.

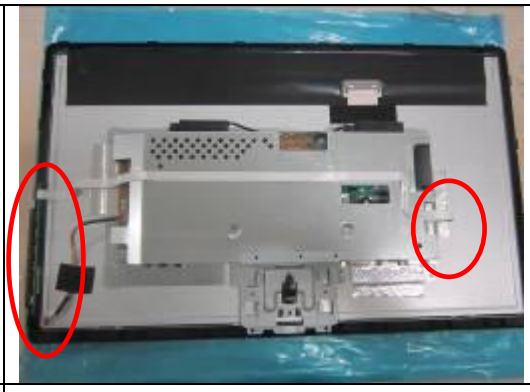
5.2.2 Assembly SOP

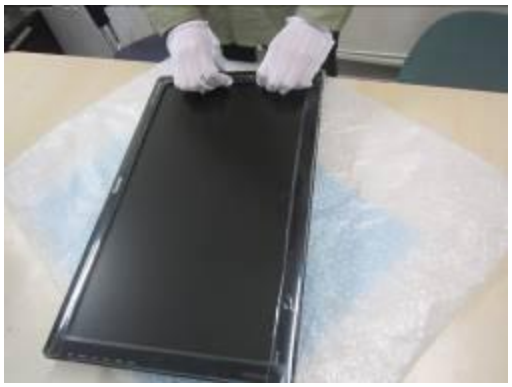
1. Clean the room for work
2. Identify the area for material
3. Prepare the implement, equipments and materials as bellow:

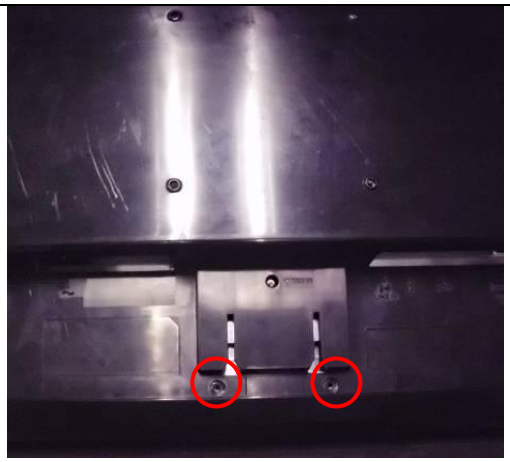
1. Press-fixture
2. working table
3. Screw-driver
4. knife*1
5. Glove
6. Cleaning cloth
7. ESD protection

1		Assemble speakers on shielding (Only for GL2055M)	Nipper pliers	
2		Open lid of the connecter and insert one side of FFC wire into interface board and close the lid		
3		Lock screws	Screw-driver	

4		Then put the panel on the BZL.		
5		Lock 2pcs screws, put the main-SHD on the BZL	Screw-driver	
6		Lock the screw on the BZL.	Screw-driver	
7		Connect the FFC cable. Connect the LAMP. Stick the tapes.		

8		Assemble the control board Put on the control board FFC wire.		
9		Turn over the monitor; assemble the Rear cover from the monitor.		

10	   	Assembly the bezel from the monitor, notice the assembly order : 1.Top (1) parts of bezel 2. Left (2) parts of bezel 3. Right (3) parts of bezel 4. Bottom (4) parts of bezel		

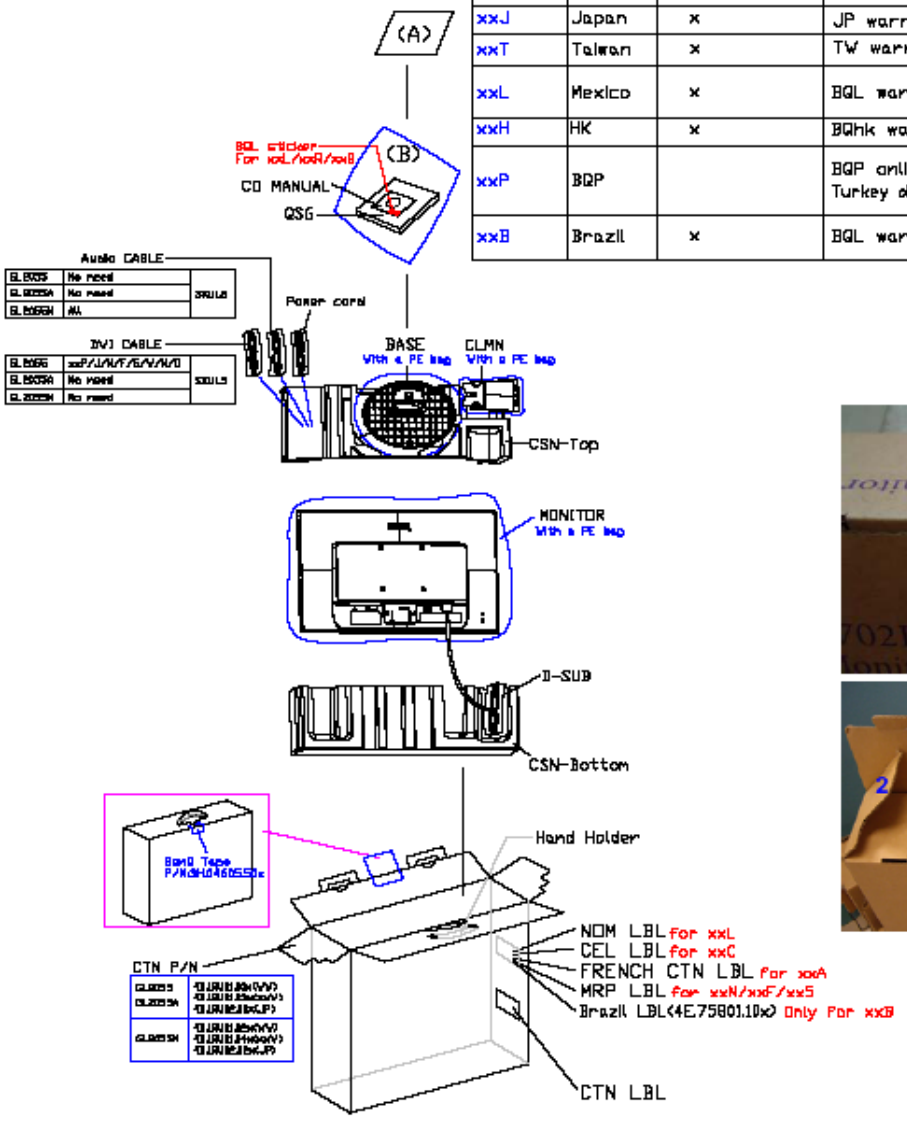
11		Fix it by 2pcs screws.		

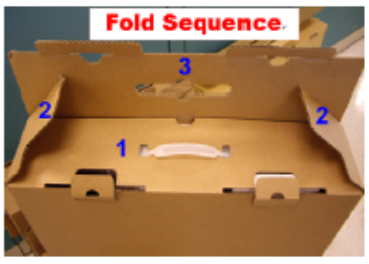
5.3. Packing

The sequence of the accessory decided by factory

Accessory Requirements v15

P/N	Region	(A) Outside	(B) Inside
xxC	China	3 guarantee card with LBL	x
xxE	EU	x	Service Information Safety Instructions
xxA	US,CA	x	US warranty card
xxR	Argentina	x	BQL warranty card
xxK, xxV, xxD, xxM, xxN, xxS, xxJ, xxF xx5	BQP	x	BQP online warranty card
xxW	Australia	x	BQau warranty card
xxJ	Japan	x	JP warranty card
xxT	Taiwan	x	TW warranty card
xxL	Mexico	x	BQL warranty card
xxH	HK	x	BQhk warranty card
xxP	BQP		BQP online warranty card Turkey distributor information
xxB	Brazil	x	BQL warranty card





5.4. Block diagram

GL2055 is a 20W" WXGA+ (1600x900) resolution TFT LCD monitor. The monitor shall support VGA and DVI with HDCP inputs. It's compliant with VESA specification to offer a smart power management and power saving function. It also offers OSD menu for users to control the adjustable items and get some information about this monitor, and the best function is to offer users an easy method to set all adjustable items well just by pressing OSD auto-adjust function which can auto adjusting all controlled items. GL2055 also offer DDC2BI function to meet VESA standard.

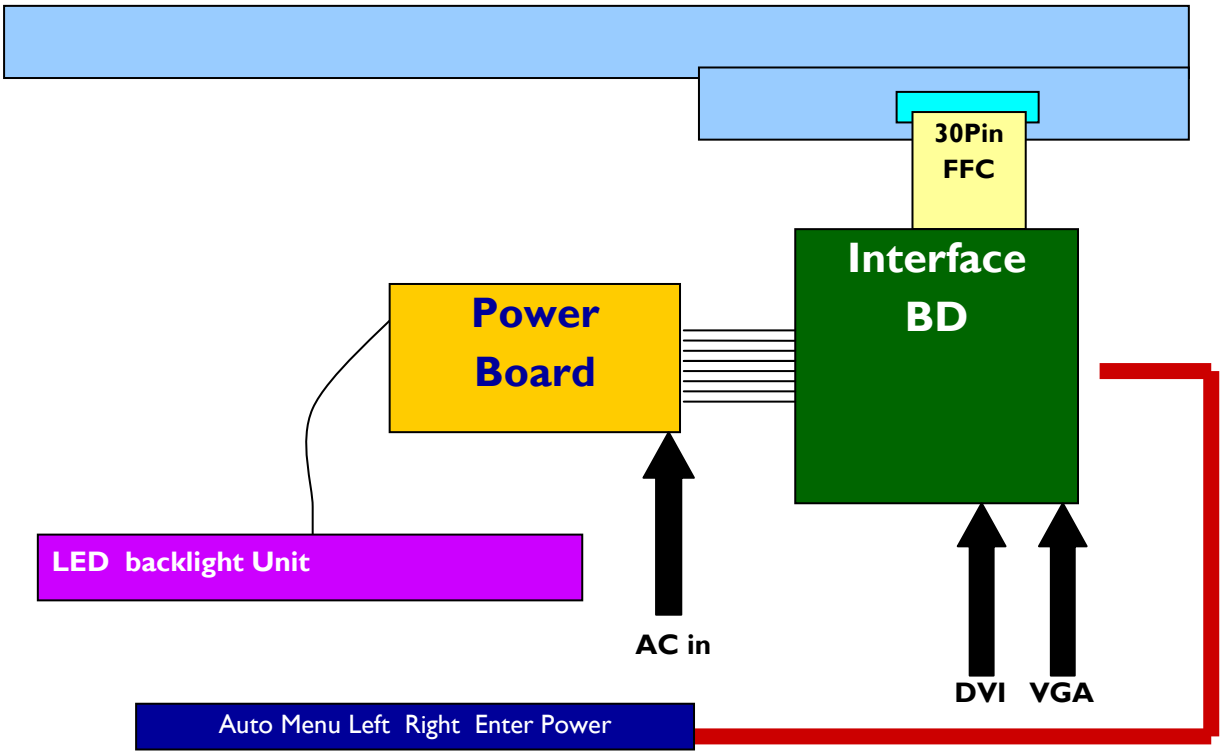
The GL2250 consists of a LCD module with LED BLU, a power board, a control board, an interface board. The block diagram is shown as below.

The GL2250A consists of a LCD module with LED BLU, a power board, a control board, an interface board. The block diagram is shown as below.

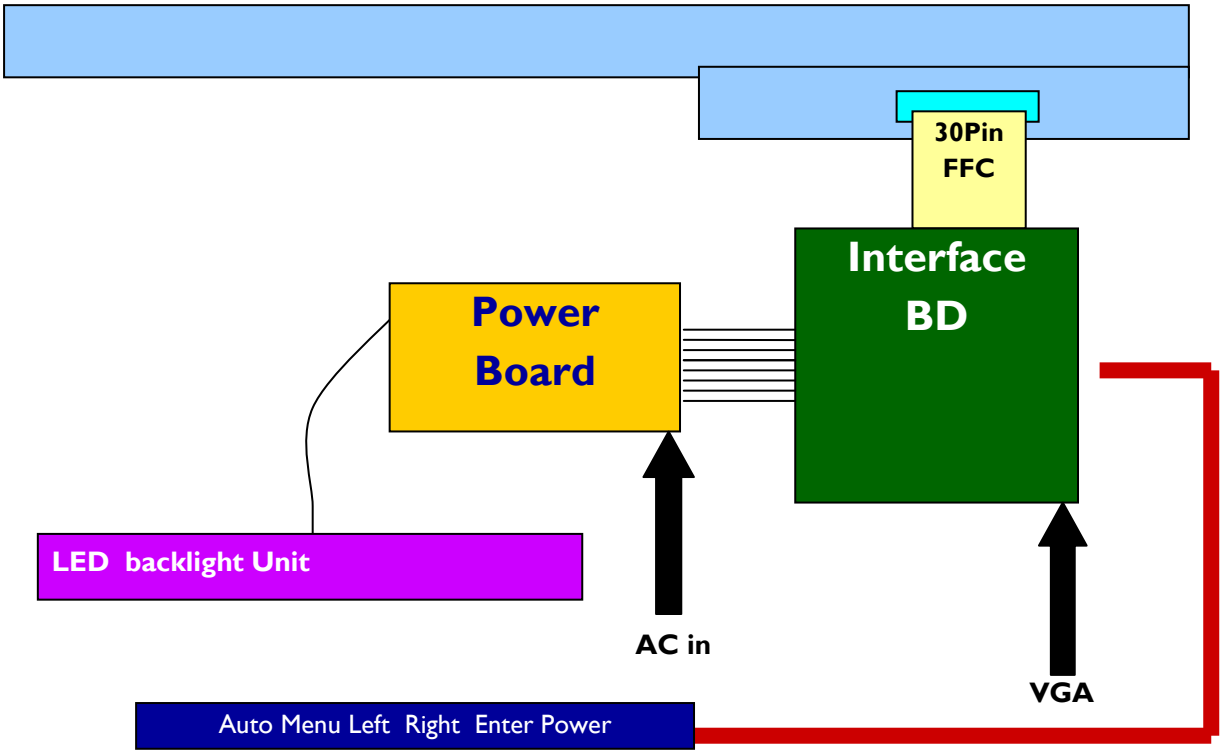
The GL2250M consists of a LCD module with LED BLU, a power board, a control board, an interface board ,a jack board and 1W speakers. The block diagram is shown as below.

The block diagram is shown as below.

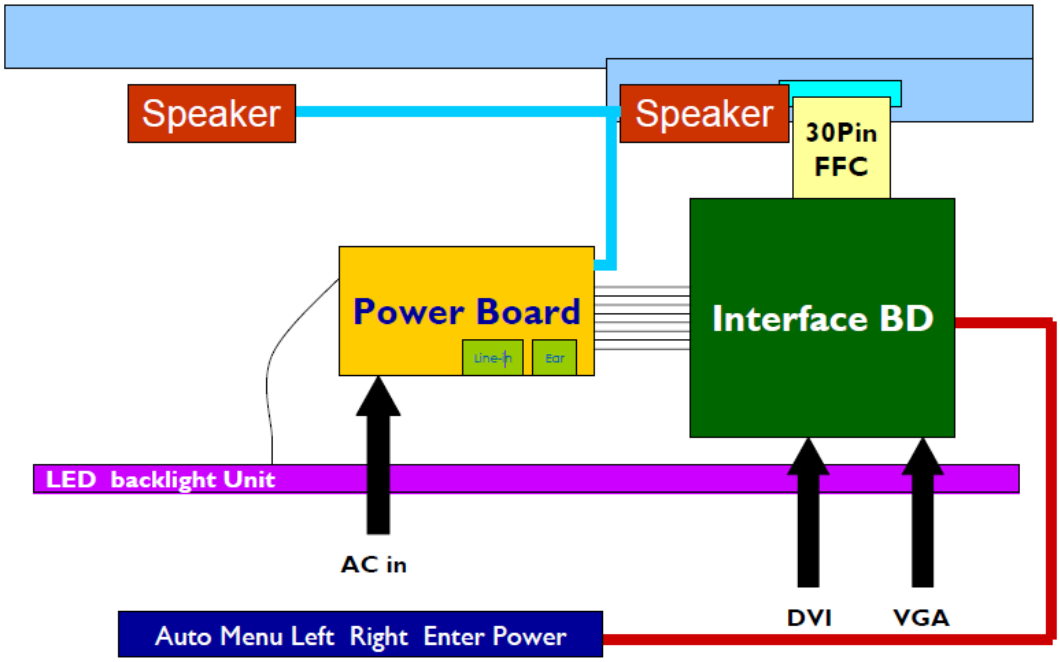
GL2055 Block Diagram



GL2055A Block Diagram



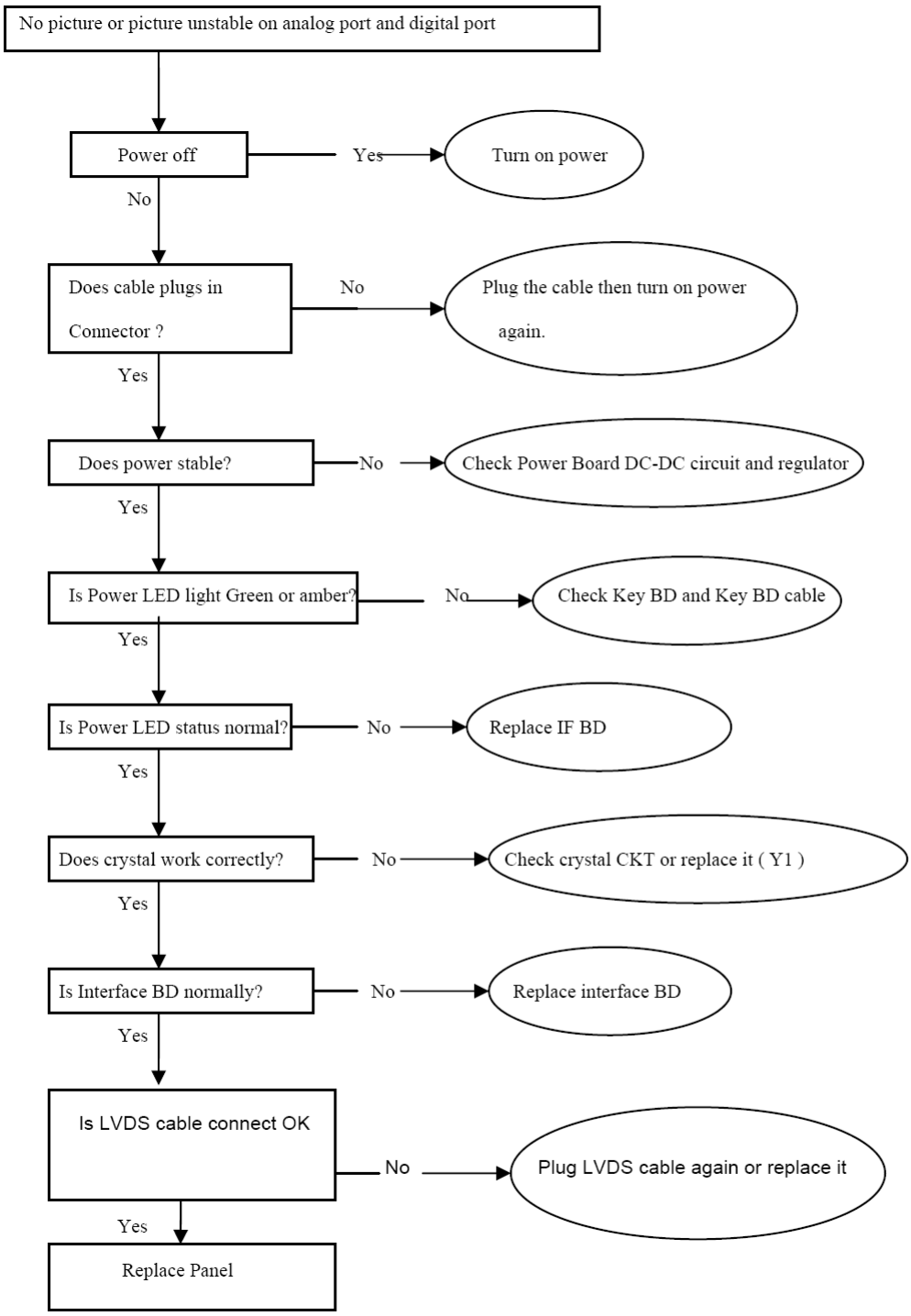
▶GL2055M Block Diagram



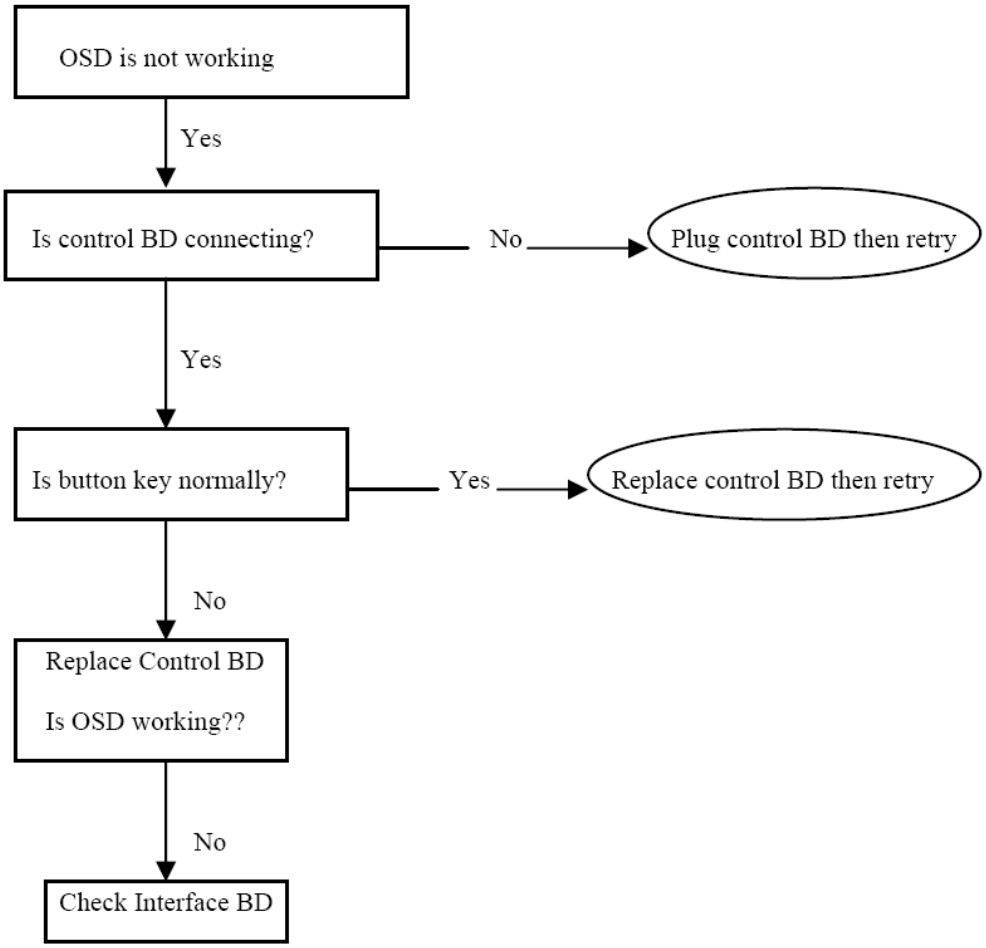
5.5. Trouble Shooting Guide

5.5.1 No Display or display is unstable on analog or digital port:

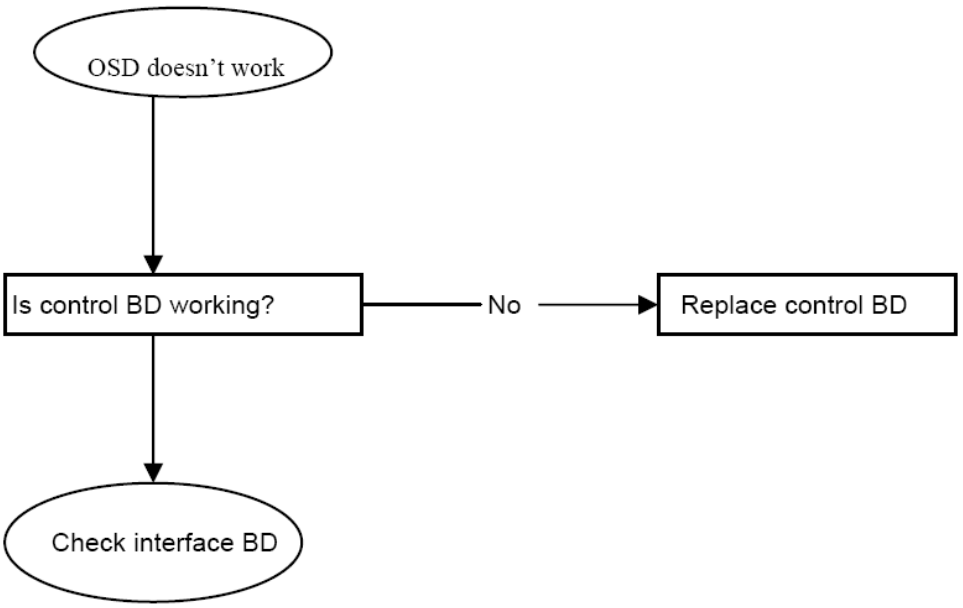
5.5.1.1 Interface Board:



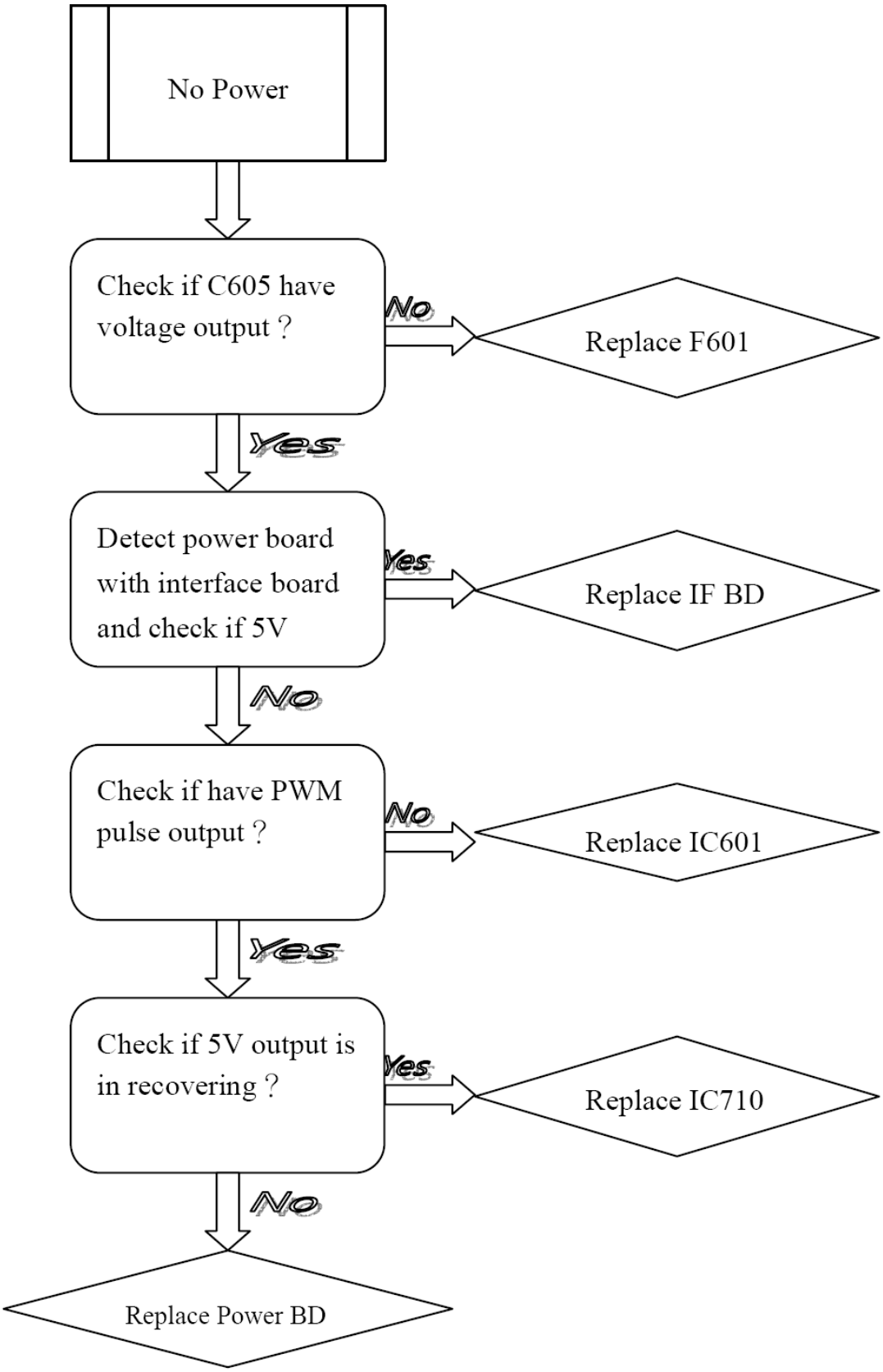
5.5.2 BUTTON Function:



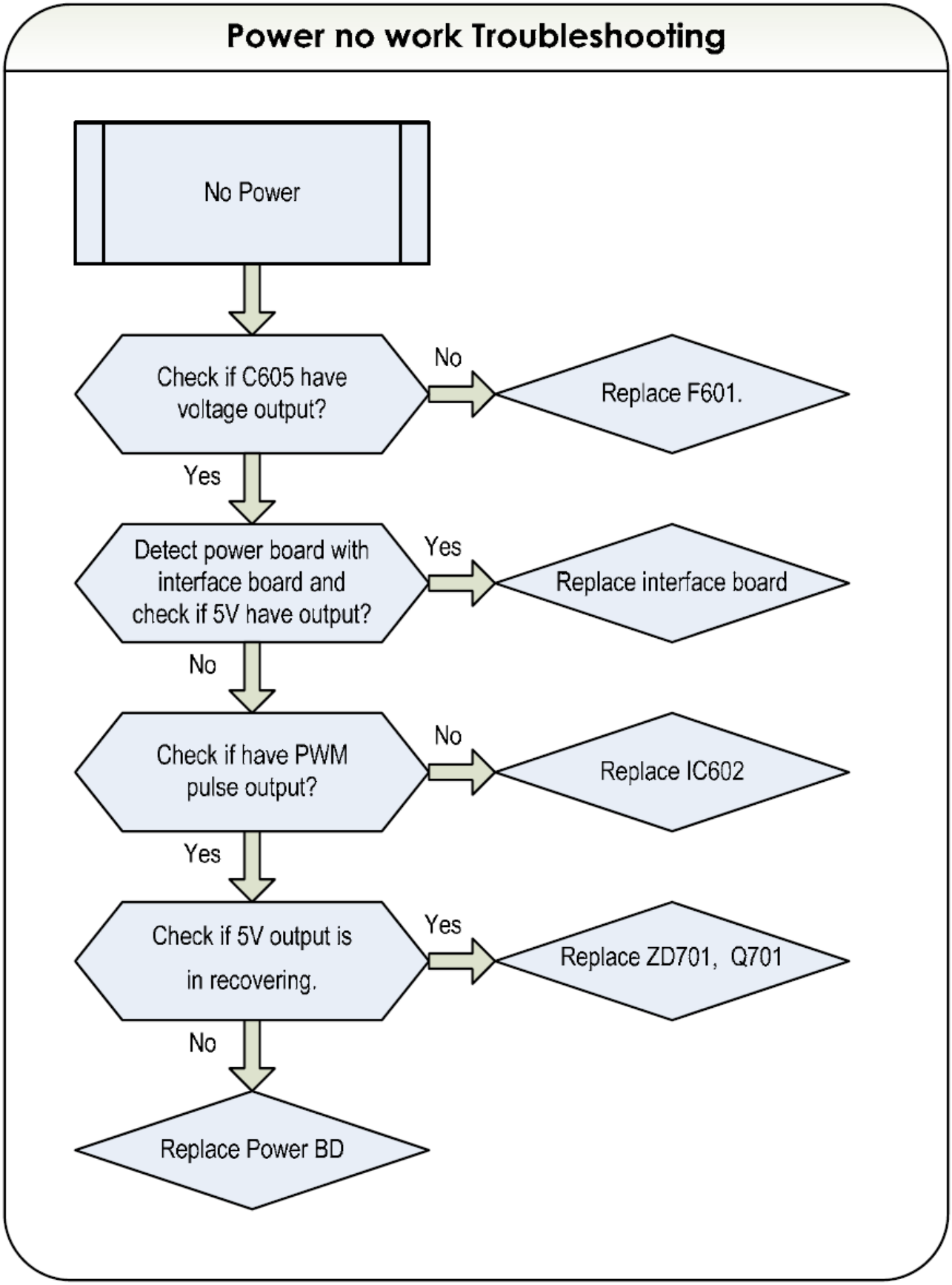
5.5.2.1 OSD Function



5.5.3 Power no work troubleshooting
(Only for GL2055A)

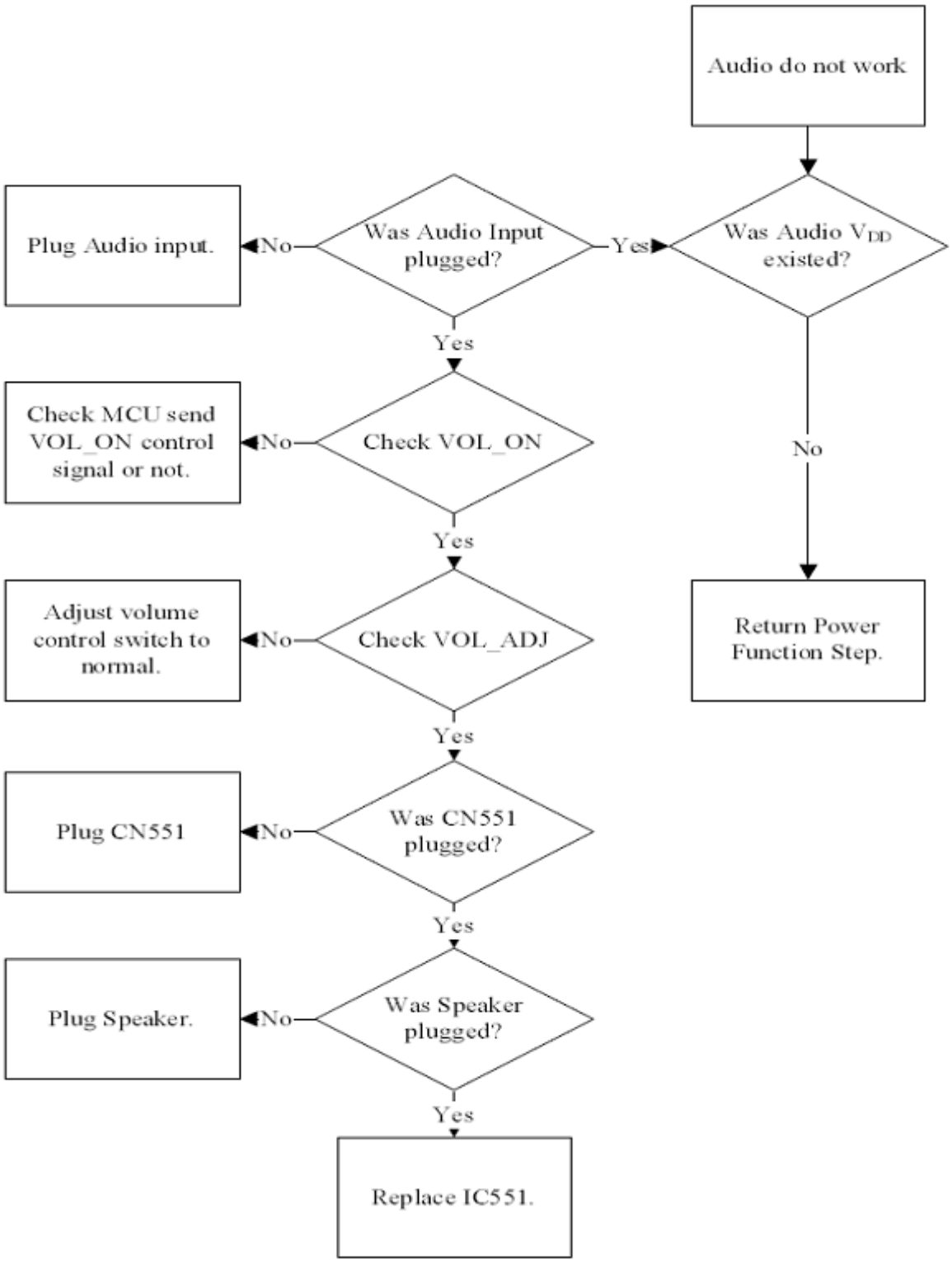


(Only forGL2055/GL2055M)



5.5.4 Audio Function

(Only for GL2055M)



5.6. Circuit Operation Theory

I. Introduction:

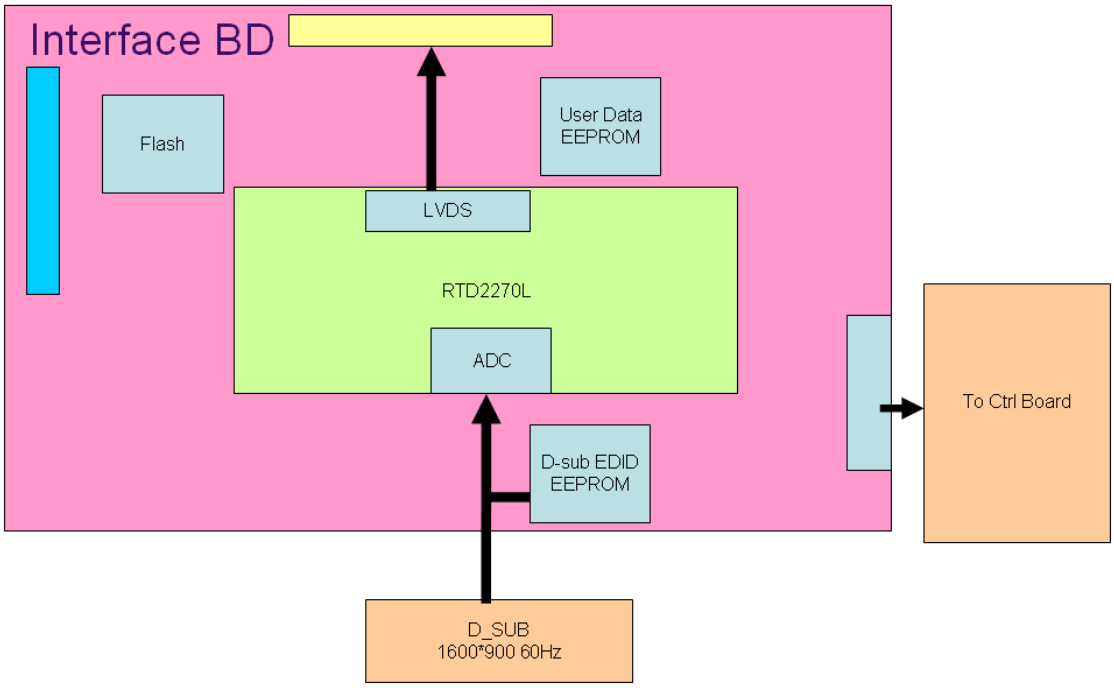
GL2055/GL2055A/GL2055M is a 20W" WXGA+ (1600x900) resolution TFT LCD monitor. The monitor shall support VGA and DVI with HDCP inputs. It's compliant with VESA specification to offer a smart power management and power saving function. It also offers OSD menu for users to control the adjustable items and get some information about this monitor, and the best function is to offer users an easy method to set all adjustable items well just by pressing OSD auto-adjust function which can auto adjusting all controlled items.

GL2055/GL2055A/GL2055M also offer DDC2BI function to meet VESA standard.

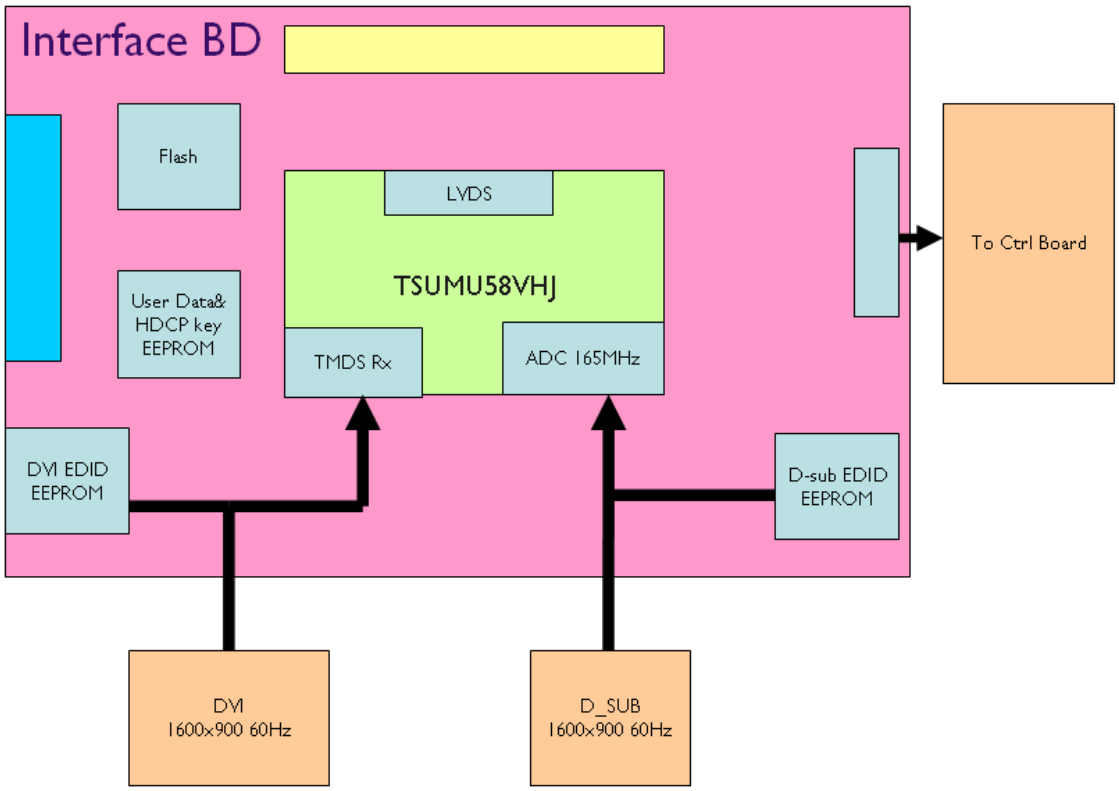
A-1.) Interface board diagram:

GL2055A

(a) Circuit operation theory:



GL2055/ GL2055M



A basic operation theory for this interface board is to convert analog signals of Red, Green and Blue to digital signals of Red, Green and Blue. The scaling IC has internal A/D converter, internal OSD, built in LVDS transmitter and auto-detect input timing functions. A/D converter is convert analog signal to digital data. OSD is offering adjustable functions to end-user. Detect timing is for detect change mode. LVDS transmitter is used to compress the digital RGB data, the Hsync, Vsync and pixel clock generated by Scaling then output to LCD module. The MCU is built-in on the Scalar IC, and offers H/W DDC2Bi function & controls system processing.. The Flash ROM stores source code. EEPROM is stored DDC data, OSD common data and user mode data.

(b) IC introduction:

1.) DDC (Display Data Channel) function: We use DDC IC to support DDC2Bi function. DDC data is store in 24C02 (EEPROM). Those data related to LCD monitor specification. PC can read them by “SDA” and “SCL” serial communication for I²C communication for DDC2Bi.

2.) Scalar IC: RTD2270L (GL2055A) and TSUMU58VHJ (GL2055/GL2055M) are total solution graphics processing IC for LCD monitors. It is configured

with an integrated triple-ADC/PLL, a display processing engine, an integrated micro-controller and output display interface that can support LVDS panel interface format. And it also integrates power management control capability for green-mode requirements and spread-spectrum support for EMI management.

3.) EEPROM: We use 24C04 (GL2055A) and 24C16 (GL2055/GL2055M) to store all the adjustable data, user settings and use 24C02 to store D-SUB EDID data.

4.) Flash ROM: We use 2M bit flash to store the FW hex.

A-2.) Control board introduction:

There are 6 keys for user's control which includes “Power”, “Menu”, “Right/Up”, “Left/Down”, “Auto”, and “Input Source”. The following descriptions are the introduction of these keys.

(1) Power key: to turn/off power of monitor

(2) “Menu” key: to enter sub-menus or select items.

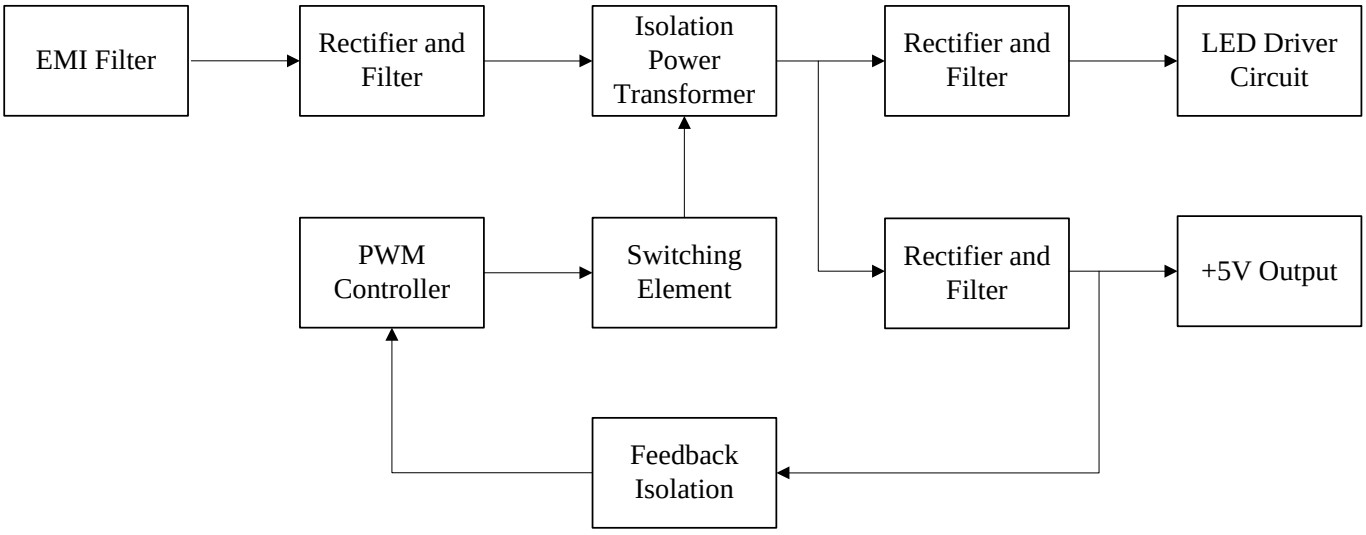
(3) “Up/Right” key: to select previous and to increase adjustment and Display mode submenu hotkey

(4) “Down/Left” key: to select next and to decrease adjustment and Picture mode submenu hotkey

(5) “Auto” key: to perform auto adjustment

(6) LED: It indicates the DPMS status of this LCD monitor; green light means DPMS on (Normal operating condition). Amber light means DPMS off (Power Saving).

A-3.) Power board diagram:



Appendix 1 – Screw List / Torque

STANDARD SCREW TORQUE SPEC for QCS

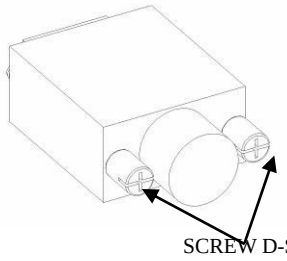
ITEM	P/N	DESCRIPTION	MOUNTING MATERIAL	TORQUE (KG-CM)	HOLE SIZE (MM)	Screw Head
1	8F.205B4.019	SCRW MACH HEX #4-40*0.3" N	Metal; D-SUB;DVI Connector	5.0±0.6	5.0±0.6	#4-40
2	8F.5A224.6R0	SCRW MACH FLATM3*0.5P*6L ZN	Metal Metal to metal Plastic to metal	Side mount: 3±0.6 Other: 4±0.6	M3*0.5	#2
3	8F.EA324.6R0	SCRW TAP FH M3*6L ZN	Metal	None tread： 8～10 Have tread: 6～8	Φ2.68±0.03	#2
4	8F.5A356.8R0	SCRW MACH FH M4*8L B-ZN NYL	Metal Metal to metal Plastic to metal	9.0±1.0	M4*0.7	#2
5	6K.L8810.001	ASSY SCREW M4*8L FP726A NLK ISU (8F.5A456.8R0+4B.L7212.001)	Metal Metal to metal Plastic to metal	9.0±1.0	M4*0.7	#2
6	8F.00273.6R0	SCRW TAP PH F/10WSH M3*6L C-ZN	Metal Metal to metal Plastic to metal PCB to metal	None tread： 8～10 Have tread: 6～8 Aluminum: 4~5	Æ2.68±0.03	#2
7	8F.VZ524.6R0	SCRW TAP FLAT+EXT M3*6L C-ZN	Metal Metal to metal	None tread： 8～10 Have tread: 6～8 Aluminum: 4~5 No thread:6.5±0.5 (SGCC/SECC 0.5T)	Æ2.68±0.03	#2
8	8F.00518.100	SCRW TAP W/FL M3*10L(S3.8)ZN	Metal Metal to metal Plastic to metal SPEAKER to metal	None tread： 8～10 Have tread: 6～8 Aluminum: 4~5	Æ2.68±0.03	#2
9	8F.00003.143	SCRW TAP PAN #4-40*3/8	Aluminum (Heatsink)	3.3±0.3	Φ2.6±0.03	#2
10	8F.VG234.6R0	SCRW TAP PH W/F M3*6 TP-S ZN	Aluminum (Heatsink)	None tread： 8～10	Φ2.68±0.03	#2

				Have tread: 6 ~ 8 Aluminum: 4~5		
11	8F.VZ526.6R0	SCRW TAP FLAT+EXT M4*6L ZN-W	Metal Metal to metal	10±1.0	M4*0.7	#2
12	8F.HA334.8R0	SCRW TAP FPHM3*6(6/1)TP-S B-ZN	Metal Metal to metal Plastic to metal	6~8	Φ2.68±0.03	#2
13	8F.5A456.8R0	SCRW MACH FLAT M4*8L C-ZN NYLO	Metal Metal to metal Plastic to metal	9.0±1.0	M4*0.7	#2
14	8F.WA324.6R0	SCRW TAP CAP M3*1.34P*6L B-NI	Metal Metal to metal Plastic to metal	5.0±1.0	Φ2.35±0.05	#2
15	8F.XA324.5R0	SCRW TAP M3*5L B-ZB	Metal Metal to Plastic	6~8	2.85~2.95	#2
16	8F.1A526.5R0	SCRW MACH PAN M4*5L NI	Metal Metal to metal Plastic to metal	8~10	M4*0.7P	#2
17	8F.1B524.3R0	SCRW MACH PAN W/SPG M3*3L NI	Metal Metal to metal Plastic to metal	6~8	M3*0.5P	#2
18	8F.5A524.4R0	SCRW MACH FLAT M3*4L NI(W2407 lift	Metal Metal to metal Plastic to metal	6~8	M3*0.5P	#2
19	8F.00573.5R0	SCRW TAP FPHM3*5 B-ZN	Metal Metal to Plastic	6~8	M3*0.5P	#1
20	8F.5A456.7R0	SCRW MACH FLAT M4*7L B-ZN NYL	Metal Metal to Metal Plastic to Metal	8~10	M4*0.7P	#2
21	8F.XA326.150	SCRW TAP FLAT M4*15L B-ZN	Metal Metal to metal Plastic to metal	8~10	M4*0.7P	#2
22	8F.00608.6R0	SCRW TAP PH F/10WSH M3*6L B-ZN	PLASTIC	4.5±0.5	Φ2.35±0.05	#2
23	8F.XA313.8R0	SCRW TAP FLAT/PT M2.5*8L B-ZN	Plastic Metal to plastic Plastic to	4.0±0.5	Φ2.0±0.05	#1

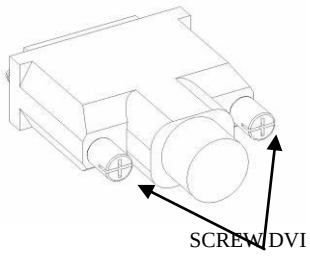
			plastic PCB to plastic			
24	8F.WA314.8R0	SCRW TAP CAP M3*1.34P*8L B-ZN	Plastic Metal to plastic Plastic to plastic	5.0±1.0	Φ2.35±0.05	#2
25	8F.XA224.6R0	SCRW TAP FH M3*6L ZN	PLASTIC	4.5±0.5	Φ2.35±0.05	#2
26	8F.XA314.8R0	SCRW TAP FLAT M3*1.34P*8L B-ZN	Plastic Metal to plastic Plastic to plastic	4.5±0.5	Φ2.35±0.05	#2
27	8F.00607.8R0	SCRW TAP FPH M3*8L(5/0.8) B-ZN	Plastic Metal to plastic Plastic to plastic PCB to plastic	4.0±0.5	Φ2.68±0.03	#2
28	8F.5A322.2R4	SCRW MACH FLAT-P M2*2.4L B-ZN	Plastic Metal to plastic Plastic to plastic PCB to plastic	2.0±0.5	Φ1.75±0.05	#1
29	8F.00551.3R0	SCRW M FPH M2*3L (6/1.4) NI	Plastic Metal to plastic Plastic to plastic PCB to plastic	2.0±0.5	Φ1.75±0.05	#1
30	8F.8A356.8R0	SCRW M M4*8L(7.5/1.5)B-ZN NY	Metal	8-10	M4*8L	#2
31	8F.1A524.5R0	SCRW MACH PAN M3x5L NI	Metal	6-8	M3x5L	#2
32	8F.VG434.6R0	#SCRW TAP PH W/F M3*6TP-S ZN	PCB to metal	No thread:6.5±0.5 (SGCC/SECC 0.5T)	M3x6L	#2
33	8F.MA324.5R5	SCRW TAP FPH M3*5.5L B-ZN	Plastic to metal	No thread:8.5±1.0 Thread:6.5±1.0 Aluminium:4.5±1.0	M3	#2

*SCREW QUANTITY &TYPE AND POSITION
REFERRED TO Q328.
*NOTES:
1. (A)STANDARD SCREW TORQUE SPEC.
2. (B)SPECIAL SCREW TORQUE SPEC.
3. T: TAPPING SCREW.
4. M: MACHING SCREW.

D-SUB Connector
SCREW TORQUE SPEC.



DVI Connector
SCREW TORQUE SPEC.

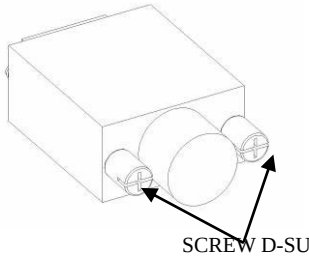
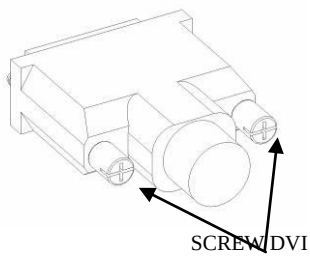


	SCREW TORQUE: 1.0±0.2 (KG-CM)	SCREW TORQUE : 1.0±0.2(KG-CM)

Standard screw torque spec for SKD site (QZB and QMX)

	Part NO.	Description	torque	Size	Screw head
1	8F.00524.8R0	SCRW M FH M4*8L(D7.5)B-ZN NYL	10.5±1.0	M4	#2
2	8F.5A256.8R0	SCRW MACH FH M4*8L ZN NYL	10.5±1.0	M4	#2
3	8F.5A356.100	SCRW MACH FH M4*10L B-ZN NYL	10.5±1.0	M4	#2
4	8F.5A356.120	SCRW MACH FH M4X12L B-ZN NYL	10.5±1.0	M4	#2
5	8F.5A556.7R0	SCRW M PAN FH M4*7L NI NLY	10.5±1.0	M4	#2
6	8F.8A356.100	SCRW MACH FPH M4*10L B-ZN NYL	10.5±1.0	M4	#2
7	8F.00558.100	SCRW MACH FH M4*10L ZN NYL	10.5±1.0	M4	#2
8	8F.00T76.120	SCRW TR15 M4*12L(8/2.6)B-ZN N	10.5±1.0	M4	TR15
9	8F.VG434.6R0	SCRW TAP PH W/F M3*6TP-S ZN SO	No thread:6.5±0.5 (SGCC/SECC 0.5T)	M3	#2
10	8F.5A356.8R0	SCRW MACH FH M4*8L B-ZN NYL	8.5±1.0	M4	#2
11	8F.5A456.5R0	SCRW MACH FLAT M4*5L C-ZN NYL	8.5±1.0	M4	#2
12	6K.L8810.001	ASSY SCREW M4*8 FP726A NLK ISU	8.5±1.0	M4	#2
13	8F.MA324.5R5	SCRW TAP FPH M3*5.5L B-ZN	No thread:8.5±1.0 Thread:6.5±1.0 Aluminium:4.5±1.0	M3	#2
14	8F.MA325.6R0	SCRW TAP FLAT-P M3*6L B-ZN	No thread:8.5±1.0 Thread:6.5±1.0 Aluminium:4.5±1.0	M3	#2
15	8F.VG434.4R0	SCRW TAP PAN F/WSH M3*4L C-ZN	No thread:8.5±1.0 Thread:6.5±1.0 Aluminium:4.5±1.0	M3	#2
16	8F.EA524.6R0	SCRW TAP FH M3*6L NI	6.5±1.0	M3	#2
17	8F.5A556.6R0	SCRW MACH FH M4*6L NI NYL	6.5±1.0	M4	#2
18	8F.WA314.8R0	SCRW TAP CAP M3*1.34P*8L B-ZN	4.5±1.0	M3	#2
19	8F.MA524.4R0	SCRW TAP FPH M3*4L(6/0.8)	4.5±1.0	M3	#2
20	8F.XA313.8R0	SCRW TAP FLAT/PT M2.5*8L B-ZN	4.5±1.0	M2.5	#2
21	8F.WA324.6R0	SCRW TAP CAP M3*6L B-ZN	4.5±1.0	M3	#2
22	8F.5A526.5R0	SCRW MACH FH M4*5L NI	Side mount:3.0±0.6 Others:4.5±1.0	M4	#2
23	8F.5A224.6R0	SCRW MACH FLAT M3*0.5P*6L ZN	Side mount:3.0±0.6 Others:4.5±1.0	M3	#2
24	8F.EA324.6R0	SCRW TAP FH M3*6L B-ZN	None thread: 8.5±1.0 Have thread: 6.5±1.0	M3	#2
25	8F.WA314.8R0	SCRW TAP CAP M3*1.34P*8L B-ZN	4.5±1.0	M3	#2

26	8F.VZ524.6R0	SCRW TAP FLAT+EXT M3*6L C-ZN	6.5±0.5 (SECC/SGCC 0.5T)	M3	#2
27	8F.1A524.5R0	SCRW MACH PAN M3*5L NI	4.5±1.0	M3	#2

*SCREW QUANTITY & TYPE AND POSITION REFERRED TO Q328. *NOTES: 1. (A)STANDARD SCREW TORQUE SPEC. 2. (B)SPECIAL SCREW TORQUE SPEC. 3. T: TAPPING SCREW. 4. M: MACHING SCREW.	D-SUB Connector SCREW TORQUE SPEC.  SCREW TORQUE: 1.2±0.5 (KG-CM)	DVI Connector SCREW TORQUE SPEC.  SCREW TORQUE : 1.2±0.5 (KG-CM)

Appendix 2-Physical Dimension Front View and Side view

Fig. 1 Physical Dimension Front View and Side view

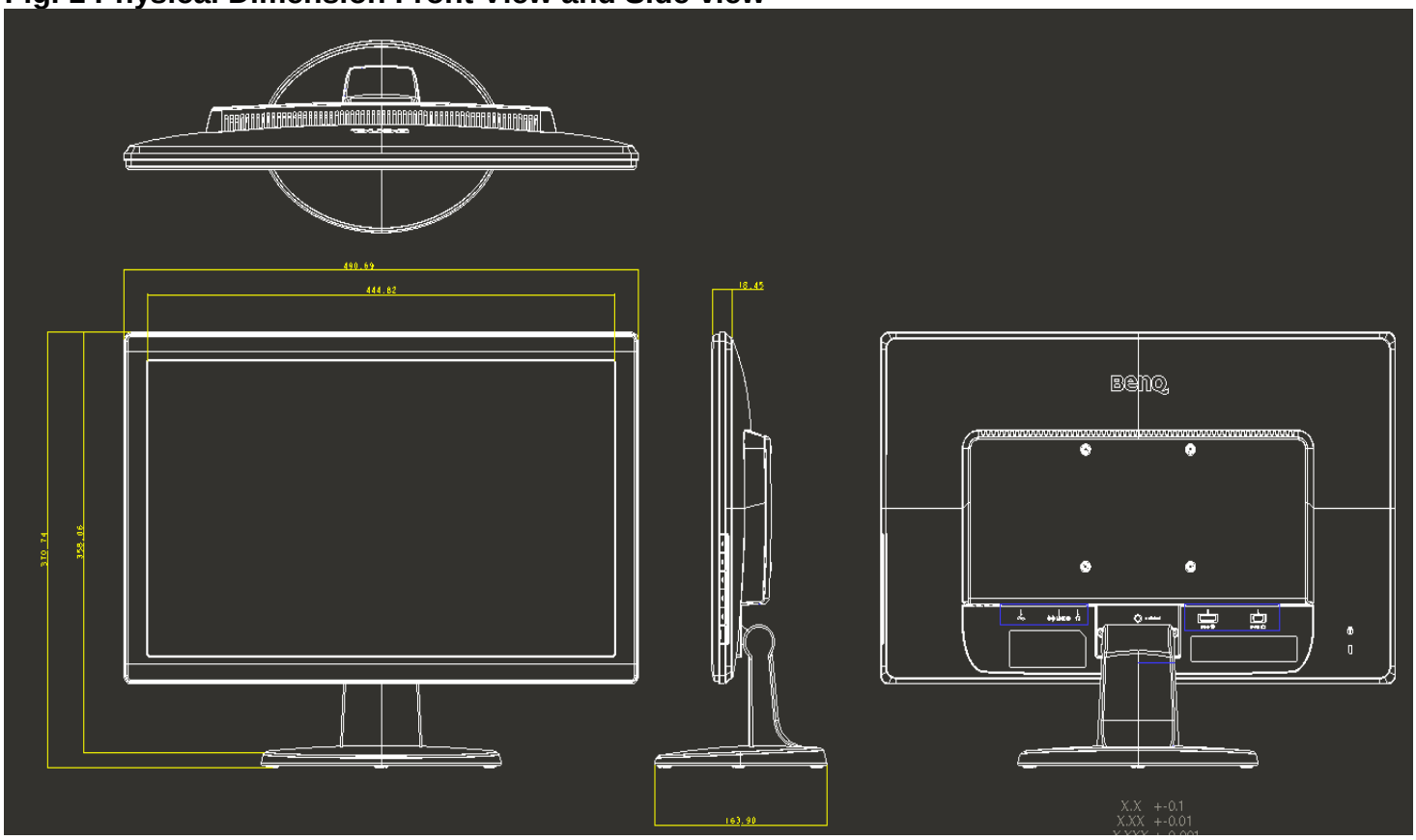


Fig. 2 Appearance Description