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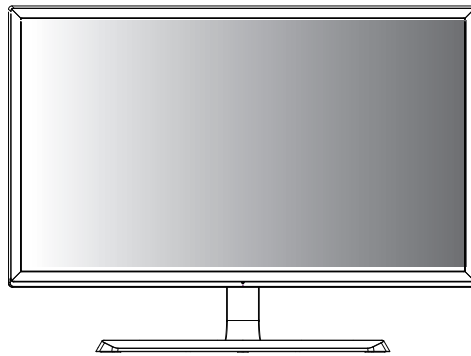
COLOR MONITOR SERVICE MANUAL

CHASSIS NO. : LM6HA

MODEL: 27UD59


CAUTION

BEFORE SERVICING THE UNIT,
READ THE **SAFETY PRECAUTIONS** IN THIS MANUAL.



PRECAUTION

WARNING FOR THE SAFETY-RELATED COMPONENT.

- There are some special components used in LCD monitor that are important for safety. **These parts are marked  on the schematic diagram and the Exploded View.** It is essential that these critical parts should be replaced with the manufacturer's specified parts to prevent electric shock, fire or other hazard.
- Do not modify original design without obtaining written permission from manufacturer or you will void the original parts and labor guarantee.

TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- The module not be exposed to the direct sunlight.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a softmaterial. (Cleaning with a dirty or rough cloth may damage the panel.)

CAUTION

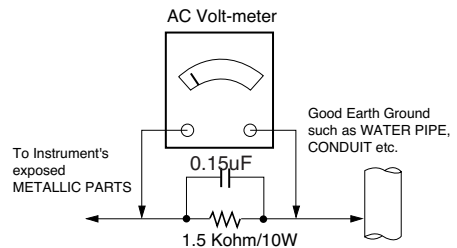
Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

WARNING

BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight (CCFL) or LIPS part, must disconnect the AC power because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

Leakage Current Hot Check Circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω
*Base on Adjustment standard

SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the **SAFETY PRECAUTIONS** on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
 - a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
 - b. Disconnecting or re-connecting any receiver electrical plug or other electrical connection.
 - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".

3. Do not spray chemicals on or near this receiver or any of its assemblies.

4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)

CAUTION: This is a flammable mixture.

Unless specified otherwise in this service manual, lubrication of contacts is not required.

5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.

Always remove the test receiver ground lead last.

8. Use with this receiver only the test fixtures specified in this service manual.

CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.

4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.

6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500°F to 600°F.

2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.

3. Keep the soldering iron tip clean and well tinned.

4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.

5. Use the following unsoldering technique

- a. Allow the soldering iron tip to reach normal temperature. (500°F to 600°F)

- b. Heat the component lead until the solder melts.

- c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.

CAUTION: Work quickly to avoid overheating the circuit board printed foil.

6. Use the following soldering technique.

- a. Allow the soldering iron tip to reach a normal temperature (500°F to 600°F)

- b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

- c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

CAUTION: Work quickly to avoid overheating the circuit board printed foil.

- d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.

CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.


At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATIONS

1. General Specification

No	Item	Content	Remark		
1	Customer	BRAND			
2	User Model Name	27UD59			
3	Sale region	Worldwide			
4	Feature	27"/ LCD MONITOR(UHD)			
5	Chassis Name	LM6HA			
6	General Scope	External SW & Adj.			
		Function		Picture Mode, Ratio, S.E.S, Six Color, On Screen Control, Dual Controller Gamma calibration	
7	Power Cord	Length : 1.55±0.05 M / Shape : Wall-out / Color : Black Weight : 0.16kg	Power cord can be changed according to region.		
8	Cable	Thunderbolt	Length : _____, Shape : _____, Color : _____ _____, Pin	Do not provide	
		USB 3.0	Length : 1.5m _____, Shape : A-B _____, Color : Black _____, Pin	Do not provide	
			2-Pair (4C)		Pin N/o: (5,6)(8,9) Impedance: [90Ω±7Ω]
			1-Pair (2C)		Pin N/o: (2,3) Impedance: [90Ω±13.5Ω]
		HDMI	Length : 1.5m / Shape : Detachable Type / Color : Black Weight : 0.091kg	SET accessory P/N : EAD00926125	
			CABLE : 100Ω±10Ω CONNECTOR : 100Ω±15Ω		
DisplayPort	Length : 1.5m / Shape : Detachable Type / Color : Black Weight : 0.095kg	SET accessory P/N : EAD63749401			
	CABLE : 100Ω±5Ω CONNECTOR : 100Ω±10Ω				
DP to Mini-DP	Length : 1.8m / Shape : Detachable Type / Color : black Weight : 0.105kg	SET accessory / P/N : EAD63127601(Ver1.2)			

			CABLE : 100Ω±5Ω CONNECTOR : 100Ω±10Ω	
9	Power		Input: AC100~240V 50~60Hz, 1.5A Max Output: DC 12V 3.3A 40W PSU Weight : 0.14kg	P/N : EAY62909505(World-wide, Except India) EAY62909506(India only)
10	Mechanical (ass'y)	Cable holder	0.003kg	SET accessory / P/N : AGF77182226
		Screw Cover Ass'y	0.022kg	SET accessory / P/N : AGF78443801
		Stand Body	0.200kg	SET accessory / P/N : AAN75789101
		Stand Base	0.316kg	SET accessory / P/N : AAN75789001
11	Manual ass'y		0.065kg	SET accessory / Refer to BOM
12	Handling guide(ESG)		0.002kg	SET accessory / Refer to BOM
13	Factory calibration report		0.002kg	SET accessory / Refer to BOM
14	Applying module list	P/No	Specification	Support Free-Sync function
		EAJ63871001	LM270WR3-SPA1	27" Module
		EAJ63871201	LM238WR2-SPD1	23.8" Module

2. Mechanical specification

No	Item		Content				Remark
1	Product Dimension		Width (W)	Length (D)	Height (H)		
		Before Packing	632.5	202.2	463.5		mm, With Stand
			632.5	61.3	375.9		mm, Without Stand
After Packing	710	450	139		mm		
2	Product Weight	Only SET	5.6kg/5.0kg				With Stand / Without Stand
		With BOX	7.2kg				
		Only Stand / Accessory	0.5±5%/0.4±5%				
3	Container Loading Quantity	Individual or Palletizing	20ft		40ft		EA
			Indi.	Pallet	Indi.	Pallet	
			640	1280	450	1035	
4	Stand Assy	Type	Base detachable				
		Size (W x D x H)	396.4*202.2 *151				mm
		Tilt Degree	-2(+1/-3) ~ 15(+3/-3) degree				
		Tilt force	0.8~2.0				kgf
		Folding Degree	N/A				
		Height length	N/A				mm
5	Appearance	General	Cabinet : High glossy + Texture Back cover : Texture Stand body : High glossy Base : High glossy				

3. Optical Character

1	Viewing Angle <CR≥10>	Horizontal(R/L) : +89°-89° (Typ.)						
		Vertical(Top/Bottom) : +89°-89° (Typ.)						
2	Luminance(휘도)	Average Luminance (cd/m ²)	200(min), 250(Typ.) (Full white pattern, 0.7V)		Warm (6500K)			
		Average Luminance (cd/m ²)	170 (min) (Full white pattern, 0.7V)		Medium (8000K)			
		Average Luminance (cd/m ²)	140 (min) (Full white pattern, 0.7V)		Cool (9300K)			
		Luminance Uniformity	75%(min),					
3	Contrast Ratio(명암비)	700(MIN), 1000(TYP), DFC → 1,000,000:1(min), 5,000,000:1(Typ.)			DFC test condition : Full black pattern (MSPG 126 timing) DFC : ON (Picture>Picture Adjust)			
4	Response Time	T _{GTG} (Gray to Gray): 14ms(Typ.), 25ms(Max)						
5	CIE Color Coordinates (색 좌표)	White	W _X	Typ-0.03	Minimum	Normal	Maximum	Warm (6500K)
			W _Y		0.313	0.329	Typ+0.03	
		White	W _X	Typ-0.03	0.295	0.305	Typ+0.03	Medium (8000K)
			W _Y					
		White	W _X	Typ-0.03	0.283	0.298	Typ+0.03	Cool (9300K)
			W _Y					
6	Color Coordinate	White signal reader mode	W _X	Typ-0.02	0.365	0.360	Typ+0.02	Full white pattern - Warm(6500K)
			W _Y					
7	Color weakness	Red signal	W _X	Typ-0.03	0.490	0.250	Typ+0.03	Full red pattern
			W _Y					
8	RGB COLOR coordinates	RED	R _x	Typ-0.03	0.652	0.150	Typ+0.03	
			R _y		0.334			
		GREEN	G _x		0.307			
			G _y		0.637			
		BLUE	B _x		0.150			
			B _y		0.060			

4. Engineering Specification

1	Supported Sync. Type	Separate Sync.				
2	Operating Frequency	Single	HDMI	Horizontal	30 ~ 135kHz	HDMI2.0 Native : 60Hz
				Vertical	56 ~ 61 Hz	
			DP	Horizontal	30 ~ 135kHz	FreeSync Range : 135K-135KHz
				Vertical	56 ~ 61 Hz	Native : 60Hz, EDID FreeSync Range 1) Basic mode : 48-61Hz 2) Extended mode : 40-61Hz Manual FreeSync Range : 1) Basic mode : 48-60Hz 2) Extended mode : 40-60Hz
			USB-C	Horizontal	30 ~ 135kHz	Native : 60Hz
				Vertical	56 ~ 61 Hz	
		PBP	HDMI	Horizontal	30 ~ 135kHz	Native : 60Hz
				Vertical	56 ~ 61 Hz	
			DP	Horizontal	30 ~ 135kHz	Native : 60Hz
				Vertical	56 ~ 61 Hz	
			USB-C	Horizontal	30 ~ 135kHz	Native : 60Hz
				Vertical	56 ~ 61 Hz	
3	Resolution	Single	HDMI	Max.	3840×2160 @ 60Hz	
				Recommend	3840×2160 @ 60Hz	
			DP	Max.	3840×2160 @ 60Hz	
				Recommend	3840×2160 @ 60Hz	
			USB-C	Max.	3840×2160 @ 60Hz	
				Recommend	3840×2160 @ 60Hz	
		PBP	HDMI	Max.	1920×2160 @ 60Hz	
				Recommend	1920×2160 @ 60Hz	
			DP	Max.	1920×2160 @ 60Hz	
				Recommend	1920×2160 @ 60Hz	
			USB-C	Max.	1920×2160 @ 60Hz	
				Recommend	1920×2160 @ 60Hz	
4	Input Voltage	Voltage :100 – 240 Vac, 50 or 60Hz				
5	Color depth	DisplayPort		10-bit color		
		HDMI1 / HDMI2		Deep Color(10bit, 12bit)		
6	Impedance	HDMI		100 ohm(-+10%)		

	Pattern	DP	100 ohm(-+10%)				
7	Inrush Current	Cold Start : 50 A		Hot : 120 A			
8	Operating Condition	Sync (H/V)	Video	MODEL	LED	Wattage	
	On Mode	On/On	Active	27UD59	White	37W(Typ) 42W(Max)	- UHD@60Hz, Full white, Outgoing - UHD@60Hz, Full white, Brightness : :100 / Contrast : 100
						29.5W	- Max power consumption of EPA condition + 20% margin
				24UD59	White	37W(Typ) 42W(Max)	- UHD@60Hz, Full white, Outgoing - UHD@60Hz, Full white, Brightness : :100 / Contrast : 100
						29.5W	- Max power consumption of EPA condition + 20% margin
	Sleep Mode	Off/On On/Off Off/Off	Off	White Blinking		0.5W	PC : Stand-by Mode.
	Off Mode			Off		0.3W	DC Switch Off
	EPA	On/On	Test video	27UD59	White	33.2W	EPA7.0 test standard
				24UD59		EPA7.0 test standard	
	ERP	On/On	Test video	27UD59	White	30.2W	ERP A class / Condition : Outgoing condition
24UD59				TBD		ERP A class / Condition : Outgoing condition	
Power rating	-	-	27UD59		1.5A	This value have to be checked in DV event with regulation team	
			24UD59				
SMART ENERGY SAVING	On/Off	-	-		Efficiency low : 15 +/- 5% high : 25 +/- 5%	Test with outgoing condition(출하조건) -. Backlight 100 / Test video -. Refer to measurement condition(2) - page 17	
9	MTBF	30,000 HRS with 90% confidence level				Lamp Life : 30,000 Hours(Min)	
10	Using Altitude	5,000 m (for Reliability) 3,000m(for FOS)					
11	Environment Condition	operating	Temperature		0°C ~ 40°C		
			Humidity		Less than 80%		
		Storage	Temperature		-20 C ~ 60 C		
			Humidity		Less than 85%		
	OSD Menu	Quick Settings	Brightness		1 – 100		
			Contrast		1 – 100		
			Volume		1 – 100		
			Input		HDMI1 / HDMI2 / DP		
			Ratio		Wide / Original		

			Picture Mode	Custom / Reader / Photo / Cinema /Dark Room1/Dark Room2/Color weakness / FPS Game1/FPS Game 2 / RTS Game/Custom(Game)		
		Picture	Picture Adjust	Super Resolution+	High/ Middle/ Low / Off /	
				Sharpness	0 – 100	
				Black Level	High / Low	
				HDMI ULTRA HD Deep Color	On / Off	When UHD Deep Color on, screen noise/flicker could be occurred with some HDMI device.
				DFC	On / Off	
			Game Adjust	Response Time	High / Middle / Low / Off	
				FreeSync	Extended / Basic / Off	
				Black Stabilizer	0-100	
			Color Adjust	Gamma	Gamma 0 / Gamma 1 / Gamma 2 / off	
				Color Temp	Custom/Warm/Medium/Cool	
		Red		0 -100		
		Green		0 - 100		
		Blue		0 -100		

				Six Color	Red Hue / Saturation : 0 – 100 Green Hue / Saturation : 0 – 100 Blue Hue / Saturation : 0 – 100 Cyan Hue / Saturation : 0 – 100 Magenta Hue / Saturation : 0 – 100 Yellow Hue / Saturation : 0 – 100
				Reset	Reset / Cancel
	General	Language		English, German, French, Spanish, Italian, Swedish, Finnish, Portuguese, Portuguese(brazil), Polish, Russian, Greek, Ukrainian, Chinese,Traditional Chinese Japanese, Korean	
		SMART ENERGY SAVING		High / Low/ Off	
		Power LED		On / Off	
		Automatic Standby		Off / 4H / 6H / 8H	
		DP 1.2		Enable / Disable	
		OSD Lock		On / Off	
	Reset	Reset / Cancel			

5.2 Open Source License

Open Source Use	If Need		
	Manual	License (in Web)	Source (in Web)
27UD59 24UD59	O	O	O

5. Applying module Character

No	Item	Content	Remark	
1	LCD Module Feature	Maker	LGD	
		Type	IPS	
		Active Display Area	27.0 inches(68.47cm) (Aspect ratio 16:9)	
		Pixel Pitch [mm]	0.1554 [mm] X 0.1554 [mm]	
		Electrical Interface	eDP	
		Color Depth	1.07 Billion colors, 10 Bit(8bit+A-FRC)	
		Size (Outline) [mm]	608.8(H)x355.3(V)x12.8(D)mm (Typ.)	
		Surface Treatment	Advanced Anti-glare treatment of the front polarizer(3H)	
		Operating Mode	Transmissive mode, normally Black	
		Back light Unit	White LED	
		Color Gamut	sRGB 99%	

(1) Standard Measurement Condition

- Ambient Luminance Level : dark (< 10 lux)
- Ambient Temperature : Normal Temperature(10°C ~ 25°C)
- warm-up Time : More than 30 min (at Full White Pattern)
- Input Signal : VESA 1920 X 1080 @ 60 Hz
- Contrast : 70 (But, the contrast is 100 when we check response time)
- Brightness : Max. 100
- Color Temp : CUSTOM
- Clock/Clock Phase : The Best Setting

(2) Another Spec.: Product Specification Standard(LG(55)G1-1034)

(3) Cosmetic Spec. : LCD Module IIS Spec.

5.1 Display Area

1) Active Display Area of the LCD Monitor Should be within Cabinet's Bezel.

2) Distance Difference between Active Area and Bezel

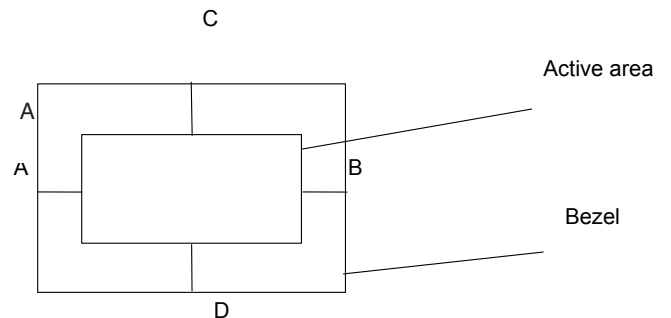
$$|A-B| < 1.0 \text{ mm} , |C-D| < 1.0 \text{ mm}$$

A: The Distance from The Left of Active Area to the Bezel

B: The Distance from The Right of Active Area to the Bezel

C: The Distance from The Top of Active Area to the Bezel

D: The Distance from The Bottom of Active Area to the Bezel



6. EDID

6.1 Single EDID Information

No	Item	Content	16진 Data
2	Product ID	HDMI1/2 : 23304 DP : 23305	5B 08 5B 09
3	Year	2015	19
4	Version	1	
5	Revision	HDMI : 3 DP : 4	HDMI : 3 DP : 4
6	Serial Number	Refer to variable data file	Refer to variable data file
7	Week	Refer to variable data file	Refer to variable data file
8	Model Name	LG Ultra HD	-
9	Check Sum	Refer to variable data file	Refer to variable data file
10	Special Item		

6.1.1.1 HDMI1 EDID (HDMI1.4)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	08	5B	01	01	01	01
010	01	19	01	03	80	3C	22	78	EA	30	35	A7	55	4E	A3	26
020	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	D1	C0
030	81	00	01	01	01	01	04	74	00	30	F2	70	5A	80	B0	58
040	8A	00	58	54	21	00	00	1E	56	5E	00	A0	A0	A0	29	50
050	30	20	35	00	58	54	21	00	00	1A	00	00	00	FD	00	38
060	3D	1E	87	1E	00	0A	20	20	20	20	20	20	00	00	00	FC
070	00	4C	47	20	55	6C	74	72	61	20	48	44	0A	20	01	89
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	1D	71	46	90	22	05	04	03	01	23	09	07	07	6D
090	03	0C	00	10	00	B8	3C	20	00	60	01	02	03	02	3A	80
0A0	18	71	38	2D	40	58	2C	45	00	58	54	21	00	00	1E	00
0B0	00	00	FF	00	0A	20	20	20	20	20	20	20	20	20	20	20
0C0	20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01

1) Physical Address : HDMI1=10

6.1.1.2 HDMI1 EDID (HDMI1.4)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	08	5B	01	01	01	01
010	01	19	01	03	80	3C	22	78	EA	30	35	A7	55	4E	A3	26
020	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	D1	C0
030	81	00	01	01	01	01	04	74	00	30	F2	70	5A	80	B0	58
040	8A	00	58	54	21	00	00	1E	56	5E	00	A0	A0	A0	29	50
050	30	20	35	00	58	54	21	00	00	1A	00	00	00	FD	00	38
060	3D	1E	87	1E	00	0A	20	20	20	20	20	20	00	00	00	FC
070	00	4C	47	20	55	6C	74	72	61	20	48	44	0A	20	01	89
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	1D	71	46	90	22	05	04	03	01	23	09	07	07	6D
090	03	0C	00	20	00	B8	3C	20	00	60	01	02	03	02	3A	80
0A0	18	71	38	2D	40	58	2C	45	00	58	54	21	00	00	1E	00
0B0	00	00	FF	00	0A	20	20	20	20	20	20	20	20	20	20	20
0C0	20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	F1

1) Physical Address : HDMI1=20

2.1.1.3 HDMI2 EDID (HDMI2.0)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	08	5B	01	01	01	01
010	01	19	01	03	80	3C	22	78	EA	30	35	A7	55	4E	A3	26
020	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	D1	C0
030	81	00	01	01	01	01	08	E8	00	30	F2	70	5A	80	B0	58
040	8A	00	58	54	21	00	00	1E	04	74	00	30	F2	70	5A	80
050	B0	58	8A	00	58	54	21	00	00	1A	00	00	00	FD	00	38
060	3D	1E	87	3C	00	0A	20	20	20	20	20	20	00	00	00	FC
070	00	4C	47	20	55	6C	74	72	61	20	48	44	0A	20	01	0F
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	30	71	4D	90	22	20	05	04	03	02	01	61	60	5D
090	5E	5F	23	09	07	07	6D	03	0C	00	10	00	B8	3C	20	00
0A0	60	01	02	03	67	D8	5D	C4	01	78	80	03	E3	0F	00	06
0B0	02	3A	80	18	71	38	2D	40	58	2C	45	00	58	54	21	00
0C0	00	1A	56	5E	00	A0	A0	A0	29	50	30	20	35	00	58	54
0D0	21	00	00	1A	00	00	00	00	00	00	00	00	00	00	00	00
0E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	AA

2.1.1.4 HDMI1 EDID (HDMI2.0)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	08	5B	01	01	01	01
010	01	19	01	03	80	3C	22	78	EA	30	35	A7	55	4E	A3	26
020	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	D1	C0
030	81	00	01	01	01	01	08	E8	00	30	F2	70	5A	80	B0	58
040	8A	00	58	54	21	00	00	1E	04	74	00	30	F2	70	5A	80
050	B0	58	8A	00	58	54	21	00	00	1A	00	00	00	FD	00	38
060	3D	1E	87	3C	00	0A	20	20	20	20	20	20	00	00	00	FC
070	00	4C	47	20	55	6C	74	72	61	20	48	44	0A	20	01	0F
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	30	71	4D	90	22	20	05	04	03	02	01	61	60	5D
090	5E	5F	23	09	07	07	6D	03	0C	00	20	00	B8	3C	20	00
0A0	60	01	02	03	67	D8	5D	C4	01	78	80	03	E3	0F	00	06
0B0	02	3A	80	18	71	38	2D	40	58	2C	45	00	58	54	21	00
0C0	00	1A	56	5E	00	A0	A0	A0	29	50	30	20	35	00	58	54
0D0	21	00	00	1A	00	00	00	00	00	00	00	00	00	00	00	00
0E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	9A

2.1.2 DP EDID (DP1.2)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	09	5B	01	01	01	01
10	01	19	01	04	B5	3C	22	78	9E	30	35	A7	55	4E	A3	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	D1	C0
30	81	00	01	01	01	01	4D	D0	00	A0	F0	70	3E	80	30	20
40	65	0C	58	54	21	00	00	1A	28	68	00	A0	F0	70	3E	80
50	08	90	65	0C	58	54	21	00	00	1A	00	00	00	FD	00	38
60	3D	1E	87	38	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	55	6C	74	72	61	20	48	44	0A	20	01	9D
80	02	03	11	71	44	90	04	03	01	23	09	07	07	83	01	00
90	00	02	3A	80	18	71	38	2D	40	58	2C	45	00	58	54	21
A0	00	00	1E	56	5E	00	A0	A0	A0	29	50	30	20	35	00	58
B0	54	21	00	00	1A	00	00	00	00	00	00	00	00	00	00	00
C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	C8

2.1.3.1 DP EDID of FREE-SYNC ON → Extended mode

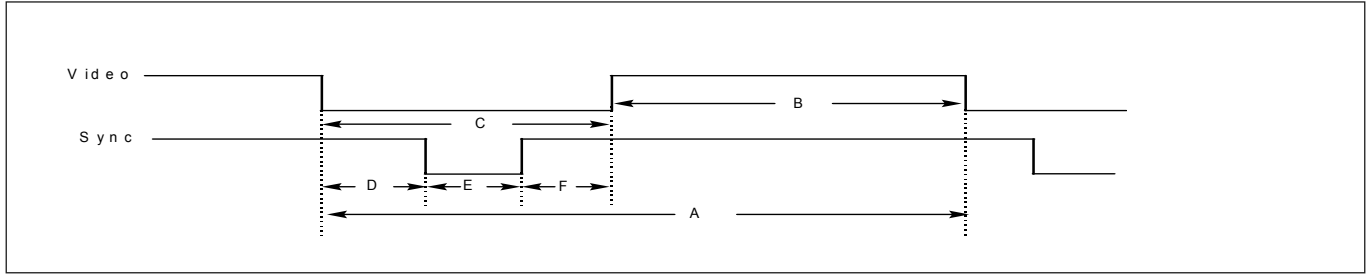
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	09	5B	01	01	01	01
10	01	19	01	04	B5	3C	22	78	9F	30	35	A7	55	4E	A3	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	D1	C0
30	81	00	01	01	01	01	4D	D0	00	A0	F0	70	3E	80	30	20
40	65	0C	58	54	21	00	00	1A	28	68	00	A0	F0	70	3E	80
50	08	90	65	0C	58	54	21	00	00	1A	00	00	00	FD	00	28
60	3D	87	87	38	01	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	55	6C	74	72	61	20	48	44	0A	20	01	42
80	02	03	11	71	44	90	04	03	01	23	09	07	07	83	01	00
90	00	02	3A	80	18	71	38	2D	40	58	2C	45	00	58	54	21
A0	00	00	1E	56	5E	00	A0	A0	A0	29	50	30	20	35	00	58
B0	54	21	00	00	1A	00	00	00	00	00	00	00	00	00	00	00
C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	C8

2.1.3.1 DP EDID of FREE-SYNC ON → Basic mode

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	09	5B	01	01	01	01
10	01	19	01	04	B5	3C	22	78	9F	30	35	A7	55	4E	A3	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	D1	C0
30	81	00	01	01	01	01	4D	D0	00	A0	F0	70	3E	80	30	20
40	65	0C	58	54	21	00	00	1A	28	68	00	A0	F0	70	3E	80
50	08	90	65	0C	58	54	21	00	00	1A	00	00	00	FD	00	30
60	3D	87	87	38	01	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	55	6C	74	72	61	20	48	44	0A	20	01	3A
80	02	03	11	71	44	90	04	03	01	23	09	07	07	83	01	00
90	00	02	3A	80	18	71	38	2D	40	58	2C	45	00	58	54	21
A0	00	00	1E	56	5E	00	A0	A0	A0	29	50	30	20	35	00	58
B0	54	21	00	00	1A	00	00	00	00	00	00	00	00	00	00	00
C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	C8

TIMING CHART

(1) Signal(Video & Sync)



6.1.1 Signal(Video & Sync) - < DisplayPort >

Mode	section	polarity	DOT CLOCK[M Hz]	Frequency [kHz]/[Hz]	Total Period(E)	Display (A)	Front Porch(D)	Sync. (C)	Back Porch(B)	Resolution
1	H(Pixels)	-	25.175	31.469	800	640	16	96	48	640 x 480
	V(Lines)	-		59.94	525	480	10	2	33	
2	H(Pixels)	+	40	37.879	1056	800	40	128	88	800 x 600
	V(Lines)	+		60.317	628	600	1	4	23	
3	H(Pixels)	-	65	48.363	1344	1024	24	136	160	1024 x 768
	V(Lines)	-		60	806	768	3	6	29	
4	H(Pixels)	+	79.99	54.347	1472	1152	32	96	192	1152 x 864
	V(Lines)	+		60.05	905	864	1	3	37	
5	H(Pixels)	+	74.250	45.00	1650	1280	110	40	220	1280 x 720
	V(Lines)	+		60.00	750	720	5	5	20	
6	H(Pixels)	+	108	63.981	1688	1280	48	112	248	1280 x 1024
	V(Lines)	+		60.02	1066	1024	1	3	38	
7	H(Pixels)	+	108.00	60.00	1800	1600	24	80	96	1600 x 900
	V(Lines)	+		60.00	1000	900	1	3	96	
8	H(Pixels)	+	148.5	67.5	2200	1920	88	44	148	1920 x 1080
	V(Lines)	-		60	1125	1080	4	5	36	
9	H(Pixels)	+	241.50	88.79	2720	2560	48	32	80	2560 x 1440
	V(Lines)	-		59.95	1481	1440	3	5	33	
10	H(Pixels)	+	266.64	66.66	4000	3840	8	144	8	3840 x 2160
	V(Lines)	-		30	2222	2160	54	5	3	
11 ¹⁾	H(Pixels)	+	533	133.32	4000	3840	8	144	8	3840 x 2160
	V(Lines)	-		60	2222	2160	54	5	3	

2) Main Recommended Timing

< HDMI >

Mode	section	polarity	DOT CLOCK[MHz]	Frequency [kHz]/[Hz]	Total Period(E)	Display (A)	Front Porch(D)	Sync. (C)	Back Porch(B)	Resolution
1	H(Pixels)	-	25.175	31.469	800	640	16	96	48	640 x 480
	V(Lines)	-		59.94	525	480	10	2	33	
2	H(Pixels)	+	40	37.879	1056	800	40	128	88	800 x 600
	V(Lines)	+		60.317	628	600	1	4	23	
3	H(Pixels)	-	65	48.363	1344	1024	24	136	160	1024 x 768
	V(Lines)	-		60	806	768	3	6	29	
4	H(Pixels)	+	79.99	54.347	1472	1152	32	96	192	1152 x 864
	V(Lines)	+		60.05	905	864	1	3	37	
5	H(Pixels)	+	74.250	45.00	1650	1280	110	40	220	1280 x 720
	V(Lines)	+		60.00	750	720	5	5	20	
6	H(Pixels)	+	108	63.981	1688	1280	48	112	248	1280 x 1024
	V(Lines)	+		60.02	1066	1024	1	3	38	
7	H(Pixels)	+	108.00	60.00	1800	1600	24	80	96	1600 x 900
	V(Lines)	+		60.00	1000	900	1	3	96	
8	H(Pixels)	+	148.5	67.5	2200	1920	88	44	148	1920 x 1080
	V(Lines)	-		60	1125	1080	4	5	36	
9	H(Pixels)	+	241.50	88.79	2720	2560	48	32	80	2560 x 1440
	V(Lines)	-		59.95	1481	1440	3	5	33	
10	H(Pixels)	+	297	67.5	4400	3840	176	88	296	3840 x 2160
	V(Lines)	-		30	2250	2160	8	10	72	
11 ¹⁾	H(Pixels)	+	594	135	4400	3840	176	88	296	3840 x 2160
	V(Lines)	-		60	2250	2160	8	10	72	

2) Main Recommended Timing

ADJUSTMENT

1. Application

1.1 This document is applied to LM6HA chassis 27"/23.7" LCD Monitor which is manufactured in Monitor Factory or is produced on the basis of this data.

1.2 Manufacturing Type : Set

2. Designation

2.1 The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.

2.2. Power Adjustment: Free Voltage

2.3. Magnetic Field Condition: Nil.

2.4. Input signal Unit: Product Specification Standard

2.5. Reserve after operation: Above 5 Minutes (Heat Run)

2.6. Adjustment equipments: Color Analyzer (CA-210 or CA-110, UA-10), DDC Adjustment Jig equipment,

3. Main PCB check process

* APC - After Manual-Insult, executing APC

3.1 ADC Process

- UD59 doesn't need ADC process because it has only digital input like DisplayPort, HDMI.

3.2 Main PCB Function test

- Check display/audio according to interface

4. Total Assembly line process

4.1 Write HDCP 1.4 / 2.2Key

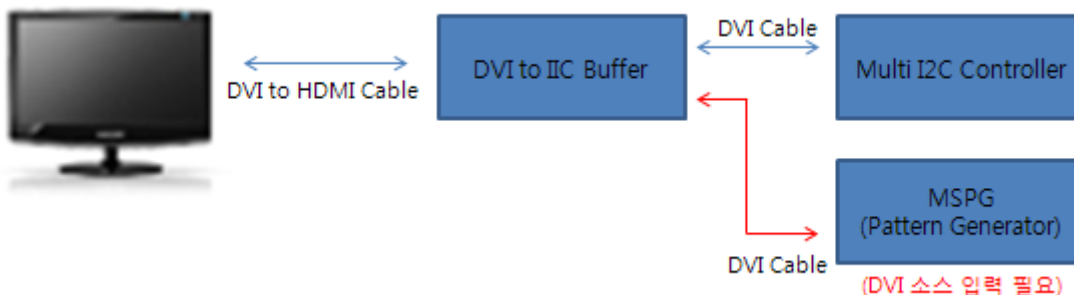
-. HDCP 1.4 KEY

a. HDCP 1.4 KEY is included in Scaler. So, do not need write HDCP 1.4 key.

-. HDCP 2.2 KEY (New, Refer to 27MU67/27UD68/27UD88 Writing process)

a. Write HDCP Key into EEPROM by using DDC2AB protocol & HDCP Adjustment Jig equipment.

If error is occurred, try to write again.



b. Write HDCP2.2 Key with IIC protocol.

c. Verification method :

Check OSD with aging on mode or using Master Signal generator with HDCP On and connect to Monitor with HDMI

4.2 White balance check and Factory calibration

- Before the factory calibration, check the White balance according to below specification.

HDMI 1920x1080, Full White		
Tolerance : ± 0.015 / Luminance Spec(min) : 250		
Check condition : custom mode(out-going condition)		
Aging Time [min]	x	y
0~10	0.316	0.335
10~30	0.313	0.332
30~	0.313	0.329

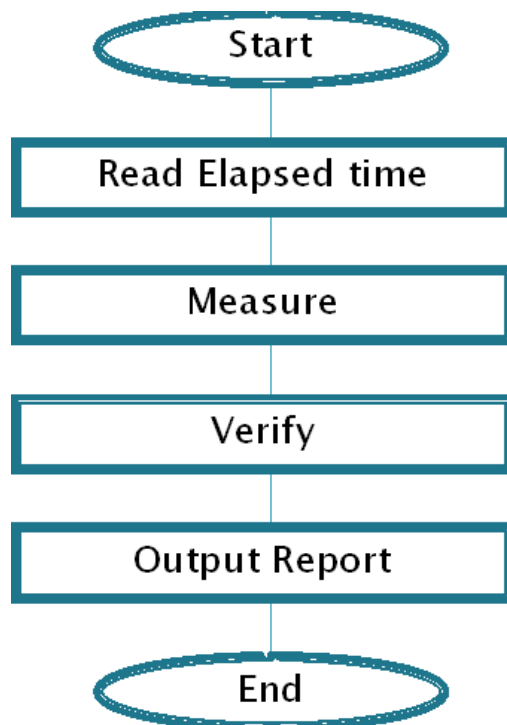
a. Factory Calibration(2.2) : Gamma, dE, Color Temperature(6500k)

- Reference Model : 27MU67/27UD68/27UD88

- Input : HDMI1/2 , Gray Pattern with Gamma correction using command using “Adjustment Command”

- this model must execute calibration of 2.2

- Gamma calibration and verify



*Note : Manual W/B process

1) When in DC OFF Condition

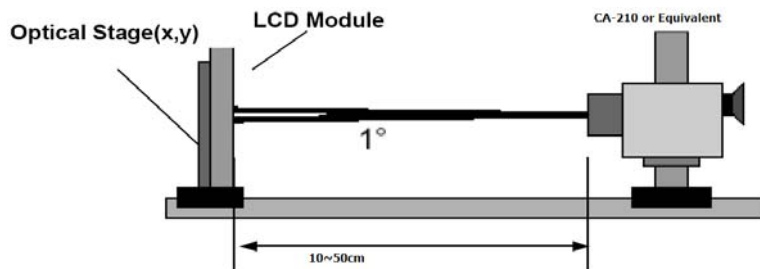
2) and push the Menu Button and On Button at the same time for about 3 seconds

Reform : 0

3) In Service Menu.



※ When doing Adjustment, Please make circumstance as below.



4.3 DPM Operation check

■ Measurement Condition: 100~240V@ 50/60Hz

- 1) Set Input to DisplayPort, HDMI1, HDMI2
- 2) Turn off the source device.
- 3) Check DPM operation refer to the below table.

Operating Condition	Sync (H/V) or Video	EUT (MSPG6100)	LED(SET)	Wattage(W)	
Sleep mode	Off/Off	Off	White blinking	0.5W	
Off mode	-	-	Off	0.3W	DC Switch Off

5. Shipping condition

→ Make sure to do **FACTORY RESET** at the final process.

No.	Item		Content& Outgoing Condition	비고		
	Accessory		Refer to BOM / And General specification(3page)	Full accessory list is included in general specification		
2	Outgoing Condition	Quick Settings	Brightness	100		
			Contrast	70		
			Volume	30		
			Input	HDMI1		
			Ratio	Wide		
		Picture	Picture Mode	Custom		
			Picture Adjust	Super Resolution+	Off	
				Sharpness	50	
				Black Level	RGB:High YUV:Low	
				HDMI ULTRA HD Deep Color	Off	
				DFC	Off	
			Game Adjust	Response Time	Middle	
				FreeSync	Off	
				Black Stabilizer	50	
			Color Adjust	Gamma	Gamma 1	
				Color Temp	Custom	
				Red	50	
				Green	50	
				Blue	50	
				Six Color (Hue/Saturation)	50	
Reset	/					
General	Language	Depend on the sale region				
	Smart Energy Saving	Low				

		Power LED	Off		
		Automatic Standby	Off(EU/EK/PD/EW/MA,4H)		
		DP 1.2	Enable		
		OSD Lock	Off		
	Reset	/			
	TRANSPARENCY				
	Operating. Time	Within 2Hours			

6. Signal composition for adjustment

6.1 I2C (100K BPS)

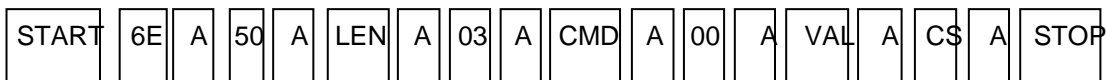
6.2 COMMUNICATION START



#Until ACK BIT goes LOW, Repeat it.

6.3 Command form.

Command form use DDC2AB standard communication protocol.



- LEN : DATA BYTE number to send.
- CMD : Command language that monitor executes.
- VAL : FOS DATA
- CS : Dada's CHECHSUM that transmit
- DELAY : 50MS
- A : Acknowledge

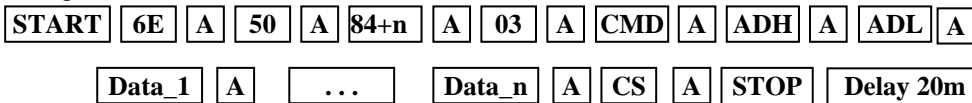
6.4 Screen adjust command (LENGTH = 84)

No.	Adjustment contents	CMD(hex)	ADR	VAL(hex)	Explanation
1	EEPROM ALL INITIAL	E4	00	00	adjustment Initialization
2	EEPROM READ	E7	Slave add		At EEPROM Read
3	EEPROM WRITE	E8	Slave add	Data	Write data at EEPROM
4	R GAIN	16	00	00-64	Tune Gain
5	G GAIN	18	00	00-64	
6	B GAIN	1A	00	00-64	
7	BRIGHT(Backlight)	10	00	00-64	Tune Analog Bright
8	FACTORY RESET	F0	00	00	Factory reset
9	AUTO_COLOR_ADJUST	F1	00	0	AUTO COLOR Tuning 0:Auto color
10	COLOR_MODE_CHANGE	F2	00	01	6500K

				02	9300K
11	Elapsed time Clear	E9	00	00	Aging off & Clear elapsed time
12	Aging On/Off	F3	00	FF/00	FF:ON / 00:OFF
13	Input Select	F4	00	0xD0 0x90 0x91	1:DisplayPort 2:HDMI1 3:HDMI2
14	SYSTEM RESET	F5	00	00	Restart System
15	Select Language	68	00	0x00 ~ 0x0F	00:English, 01: German 02: French 03: Spanish 04: Italian 05: Swedish, 06:Finnish 07: Portuguese 08: Brazil 09: Polish 0A: Russian 0B: Greek 0C: Ukrainian 0D: Chinese 0E:Japanese 0F: Korean 11: Traditional Chinese
	EDID SN UPDATE	0x77	0	0x01~0x02	0x01 : HDMI1 0x02 : HDMI2

6.5. EEPROM Data Write

6.5.1 Signal TABLE



LEN : 84h+Bytes

CMD : E8h

ADH : E²PROM Slave Address(A0,A2,A4,A6,A8,AA,AC,AE), Not 00h(Reserved by Buffer To EEPROM)

ADL : E²PROM Sub Address(00~FF)

Data : Write data

Delay : 20ms

6.5.2. Command Set

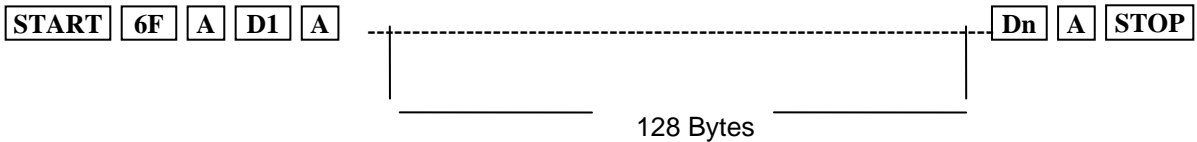
No.	Adjustment contents	CMD(hex)	LEN	Explanation
1	EEPROM WRITE	E8	94	16-Byte Write
2			(84+n)	n-byte Write

* Use

- FOS Default write :
<14mode data> write
SyncFlags, HPeriodH, HPeriodL, VtotalH, VtotalL, SrcHTotalH, SrcHTotalL
SrcHStartH, SrcHStartL, SrcVStartH, SrcVStartL, HsyncPhase
- Temporary Data write: Write to particular address of EEPROM.

6.6 E²PROM Data Read

6.6.1 Signal TABLE



6.6.2 COMMAND SET

No.	Adjustment contents	CMD(hex)	ADH(hex)	ADL(hex)	Explanation
1	EEPROM READ	E7	A0	0	0-Page 0~7F Read
2				80	0-Page 80~FF Read
3			A2	0	1-Page 0~7F Read
4				80	1-Page 80~FF Read
5			A4	0	2-Page 0~7F Read
6				80	2-Page 80~FF Read
7			A6	0	3-Page 0~7F Read
8				80	3-Page 80~FF Read
9			A8	0	4-Page 0~7F Read
10				80	4-Page 80~FF Read
11			AA	0	5-Page 0~7F Read
12				80	5-Page 80~FF Read
13			AC	0	6-Page 0~7F Read
14				80	6-Page 80~FF Read
15			AE	0	7-Page 0~7F Read
16				80	7-Page 80~FF Read

6.6.3 Use

- Read E²PROM's specific area as unit of 128(80h)-byte. (84h)

6.6.4 EDID Write

EEPROM access by using DDC2B protocol

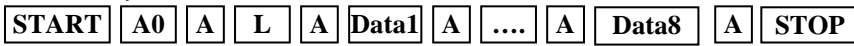
- 1-Byte write



L : 0x00~0x7F

D : data

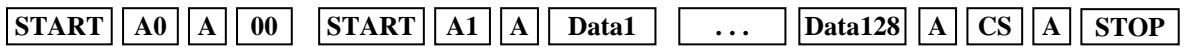
- 8-byte write



L : 0x00,0x10,...0x70

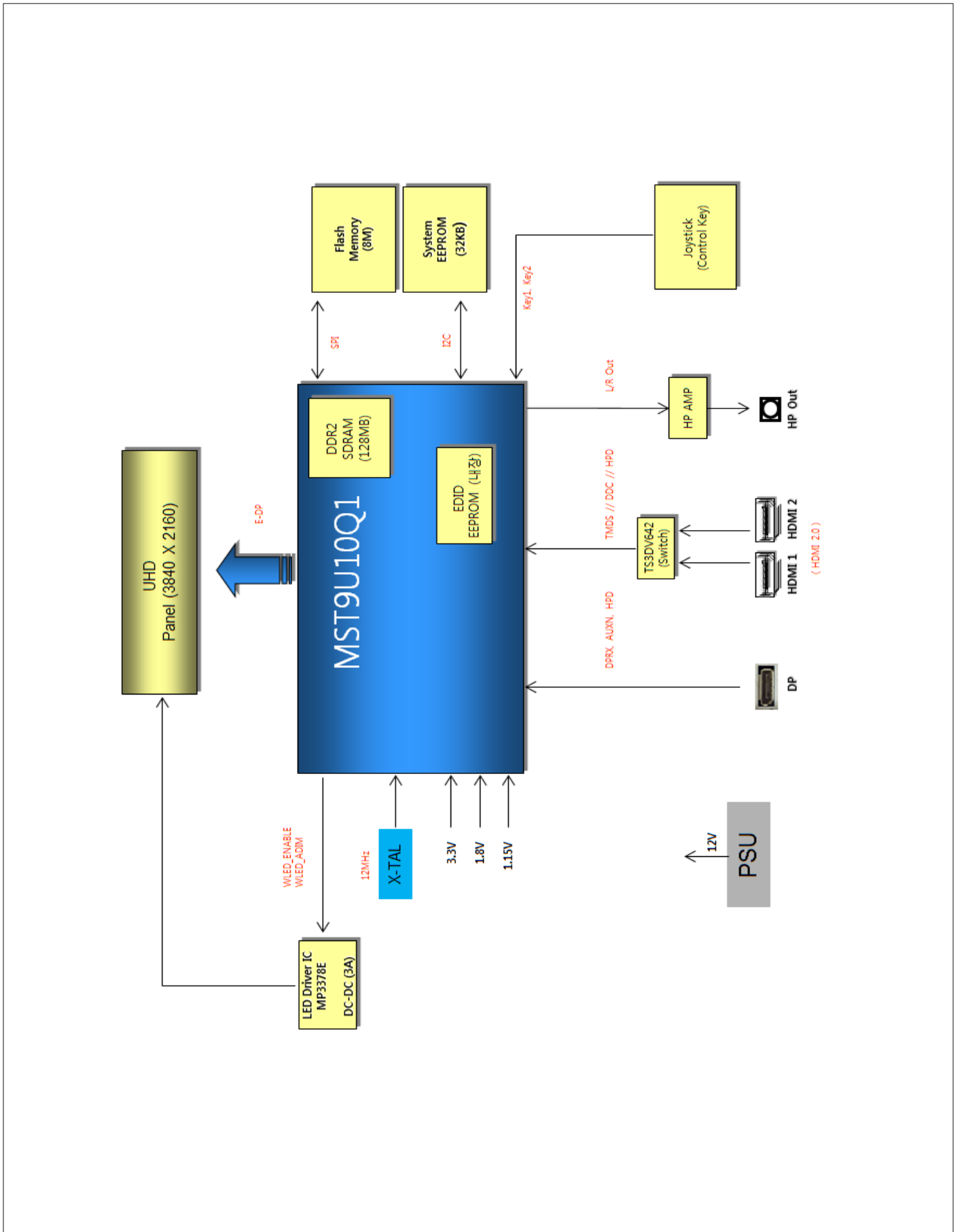
6.6.5 EDID Read

DDC2B Command.(A0/A1)



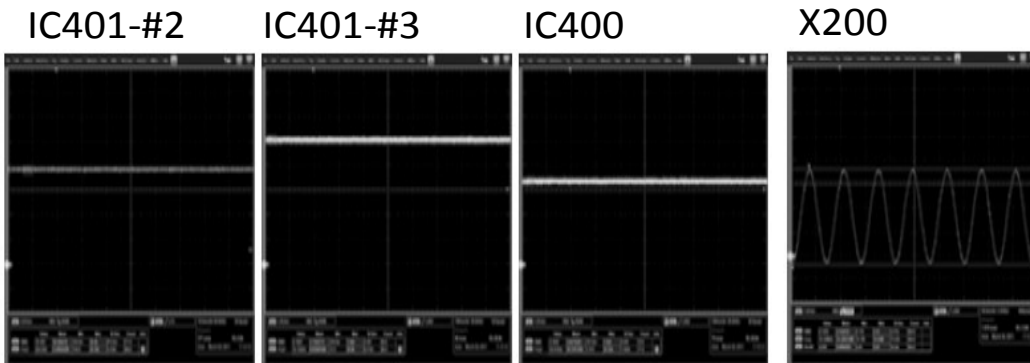
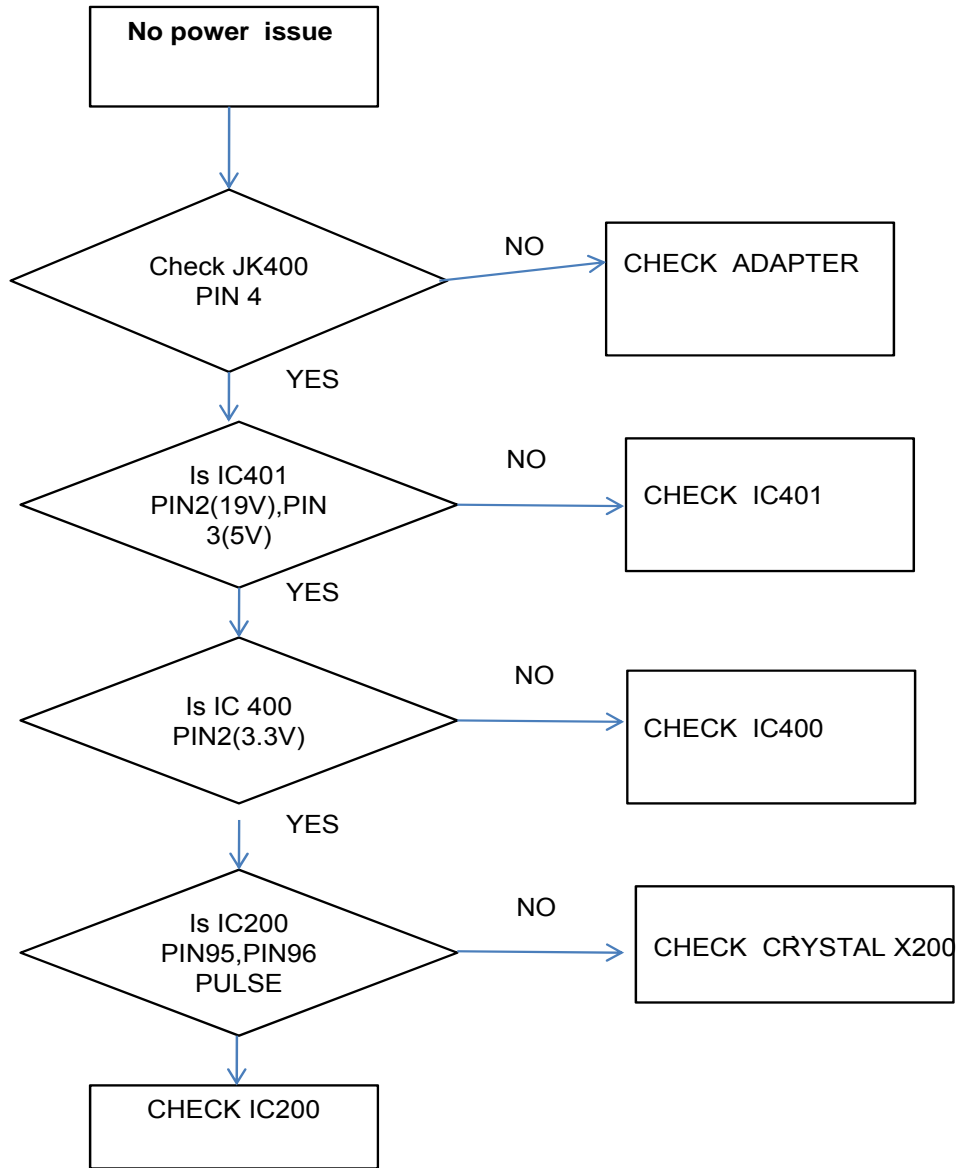
- 128 Byte transfer of EDID Buffer of MICOM

BLOCK DIAGRAM (Main)

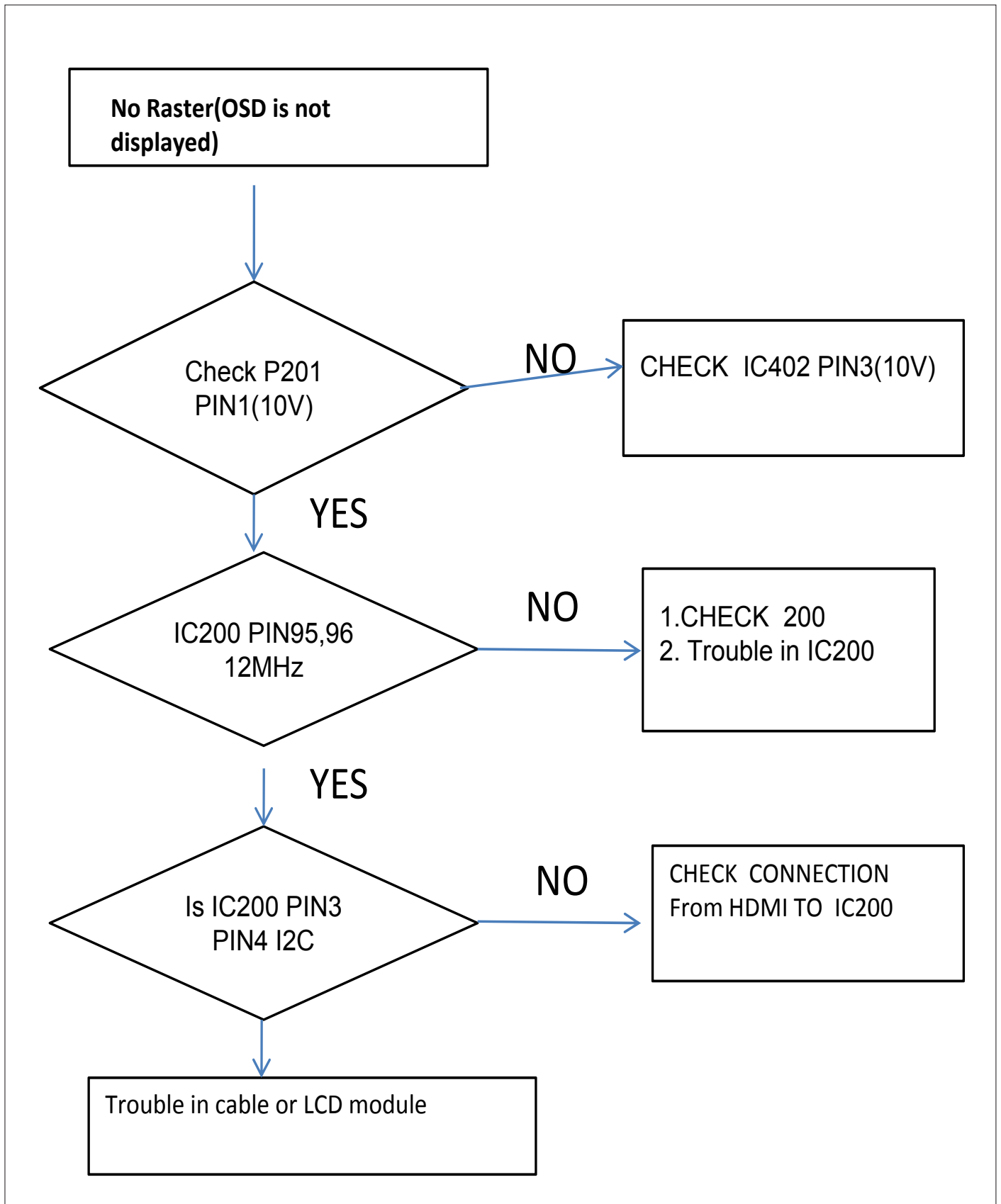


TROUBLESHOOTING GUIDE

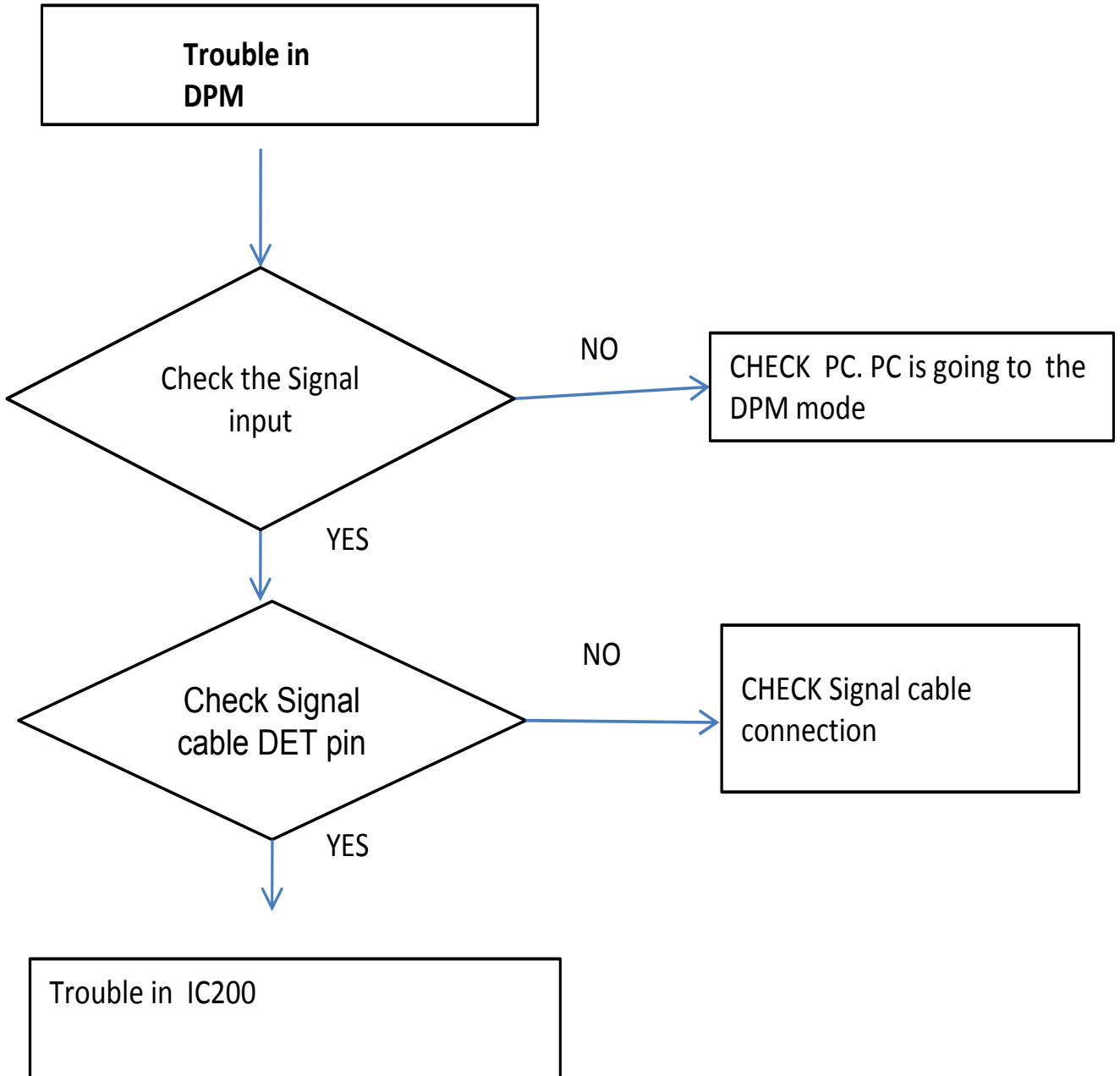
1. NO POWER



2. NO RASTER (OSD IS NOT DISPLAYED) – MAIN



3. Trouble in DPM



3. Assemble and disassemble method

■ Disassemble method



1. Remove the stand



1.Remove the Screw 1EA



1.Disassemble from top ->left/right ->top corner .



1.The open status top/side of both , one hand was supported module, and open the Back cover.



1. Disassemble the Rear shield assy and hinge assy and all cable.



1. Remove the cabinet from module

■ Tool Description



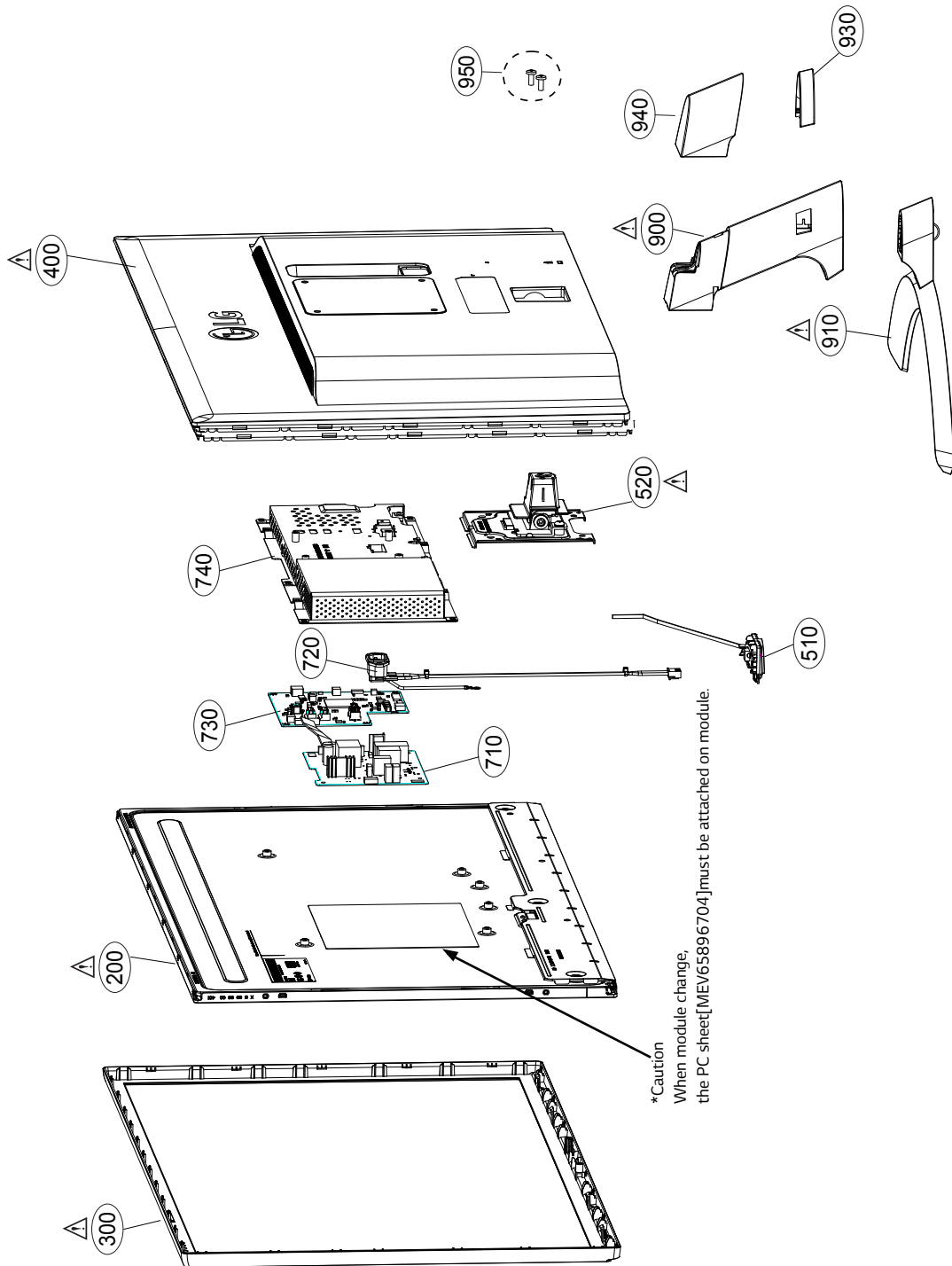
General drivers

Gloves

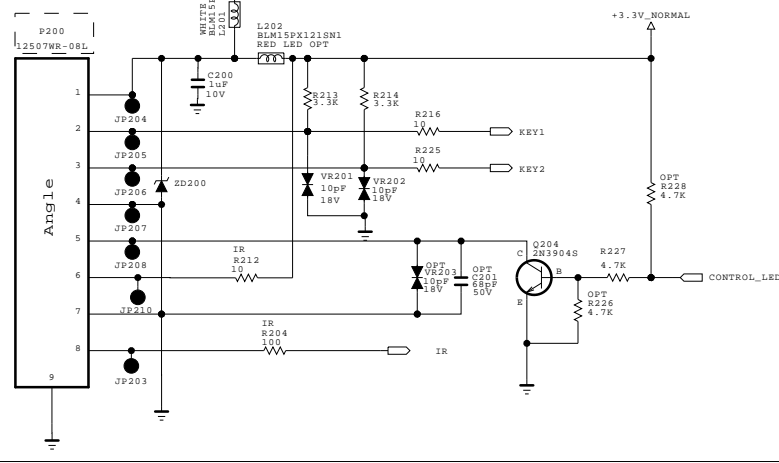
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

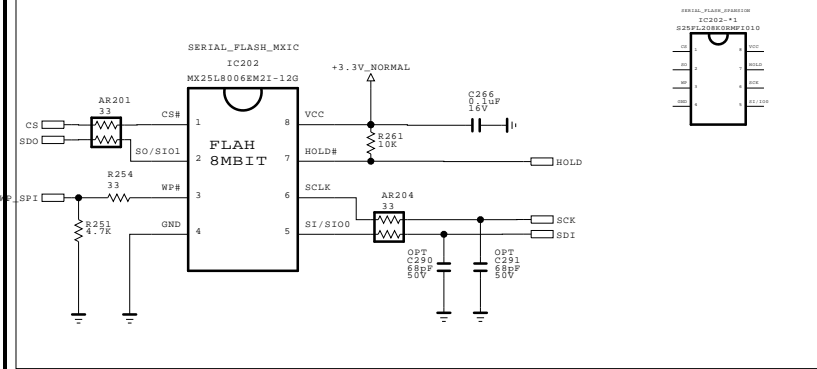
Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by Δ in the Schematic Diagram and EXPLODED VIEW. It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards. Do not modify the original design without permission of manufacturer.



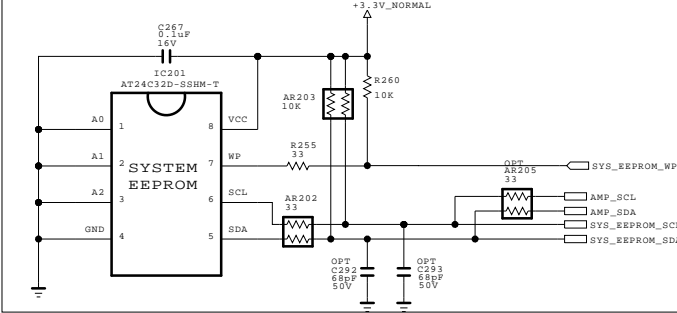
Joystick Key



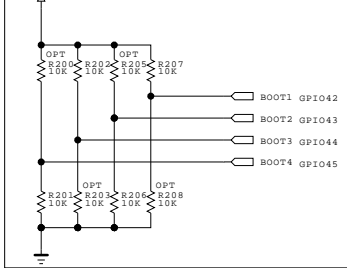
FLASH MEMORY



SYSTEM EEPROM

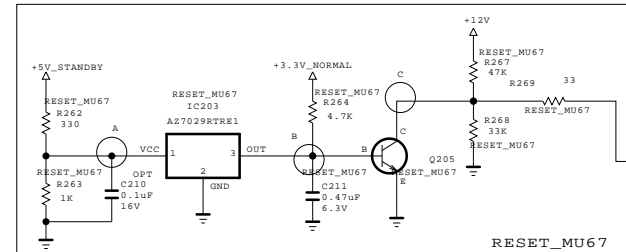


BOOT-STRAP

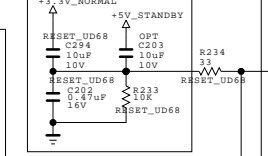


A = $5V \cdot (4.7k / (4.7k + 2.4k)) = 3.31[V]$
 Voltage Detector:
 : If $V_{IN}(A) < 2.9V$, Output(B) goes to Low shortly(3ms).
 -> $V_{Reset}(C)$ goes to High(4.95V) when B is Low.

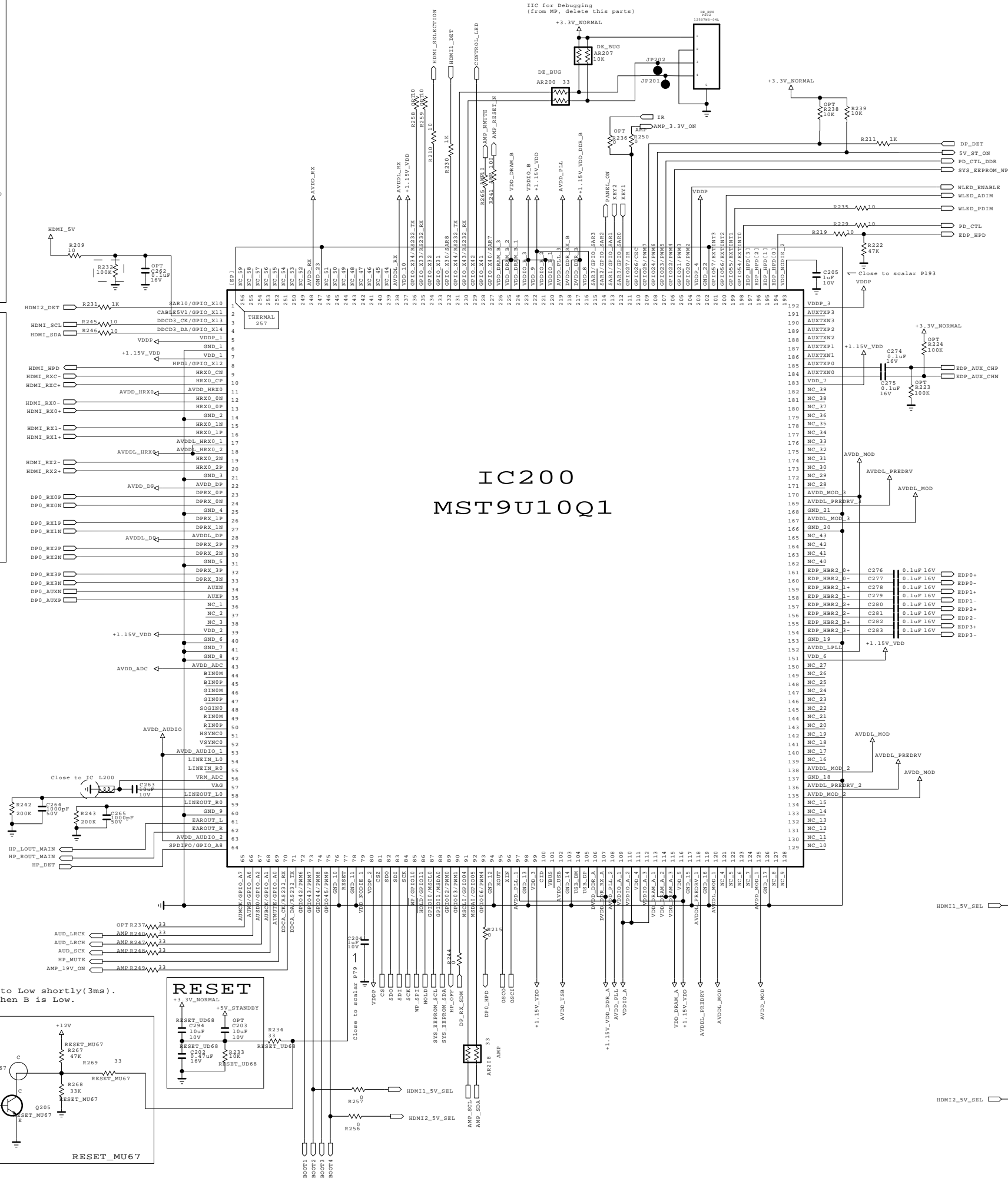
GPIO45	GPIO44	GPIO43	GPIO42	FUNCTION
L	L	H	H	BOOT from S1
L	H	L	L	SBUS
L	H	L	H	BOOT from R2
H	L	L	L	EXT RIU



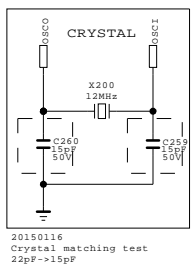
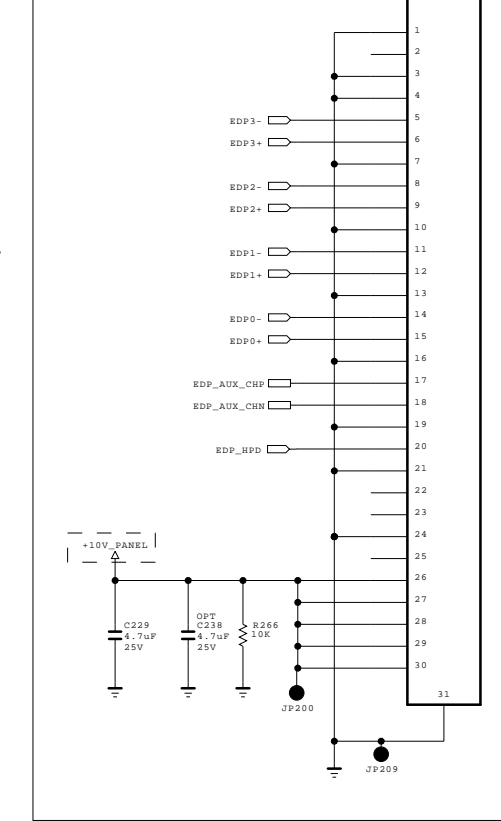
RESET



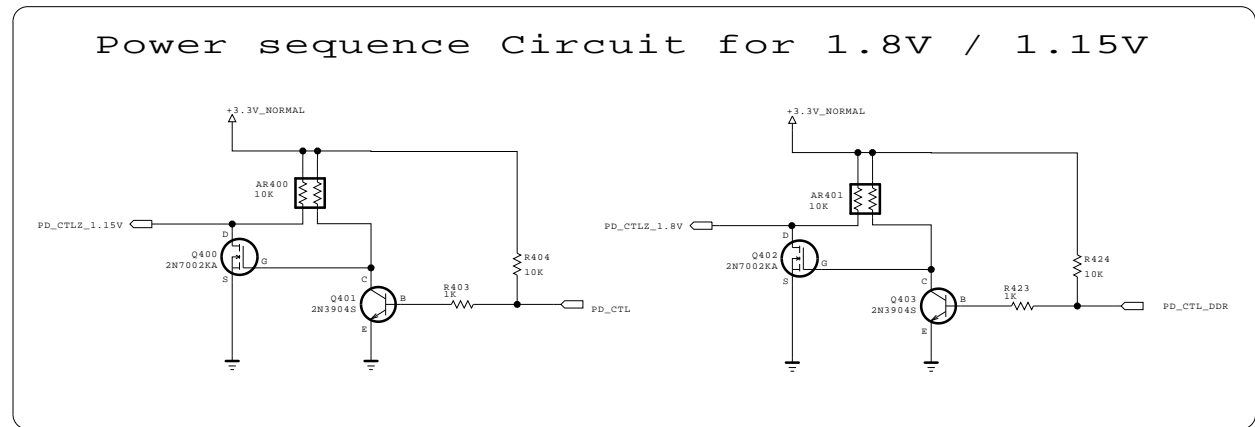
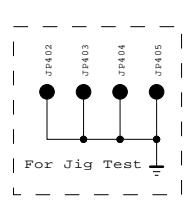
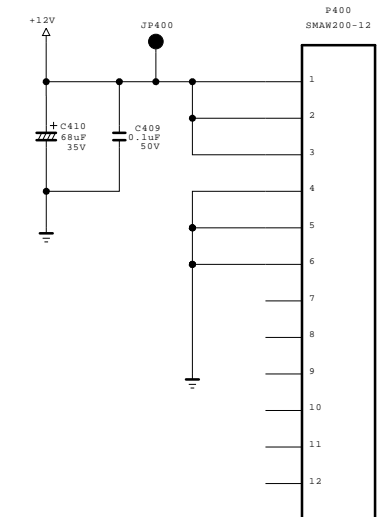
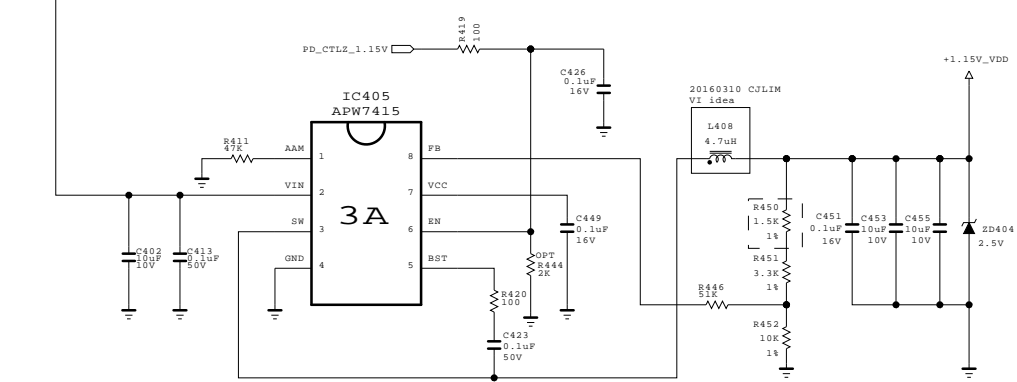
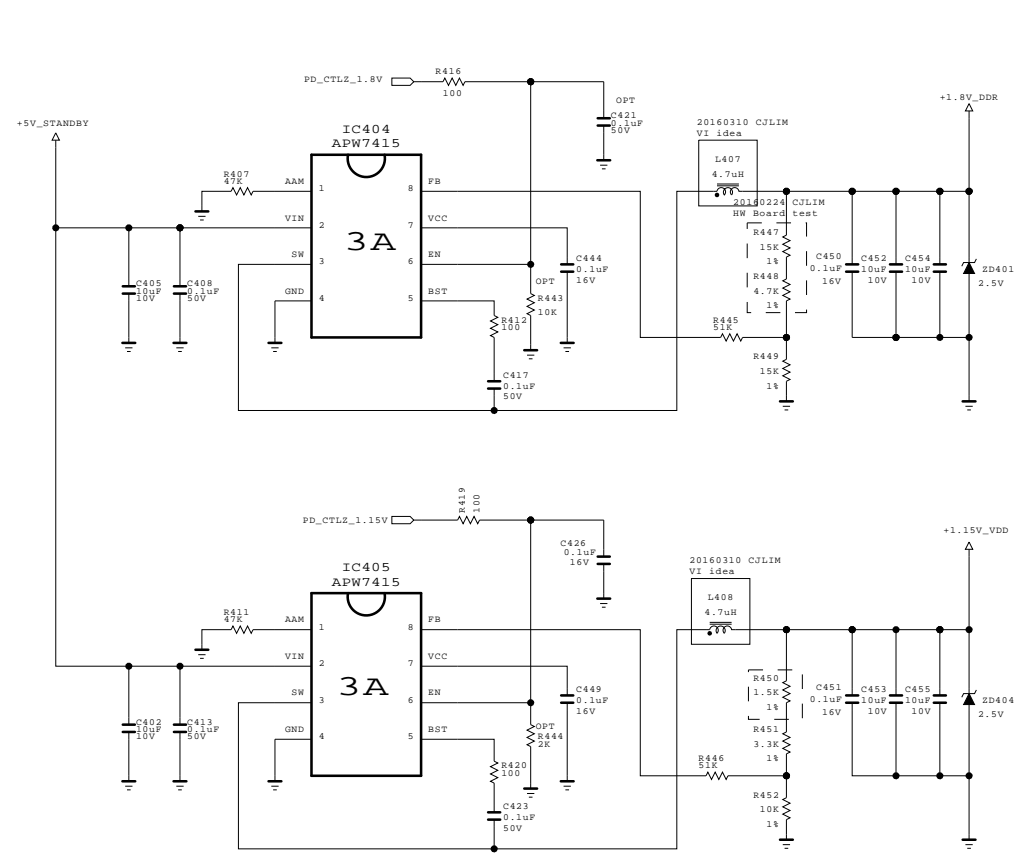
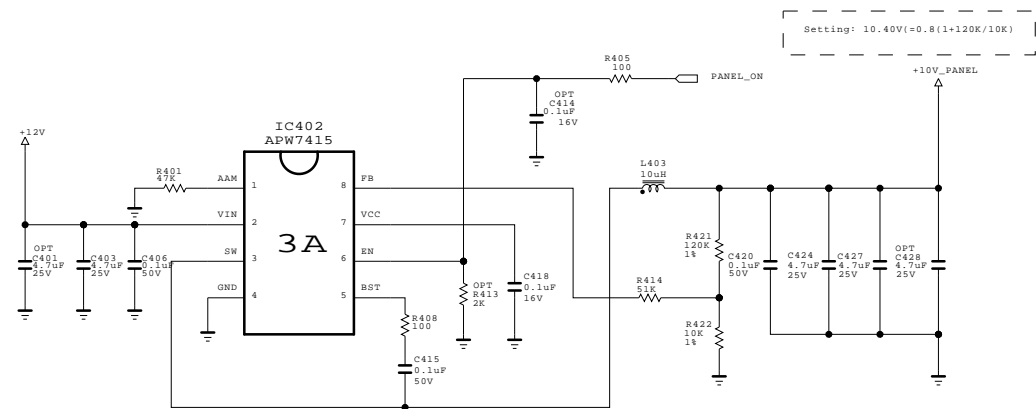
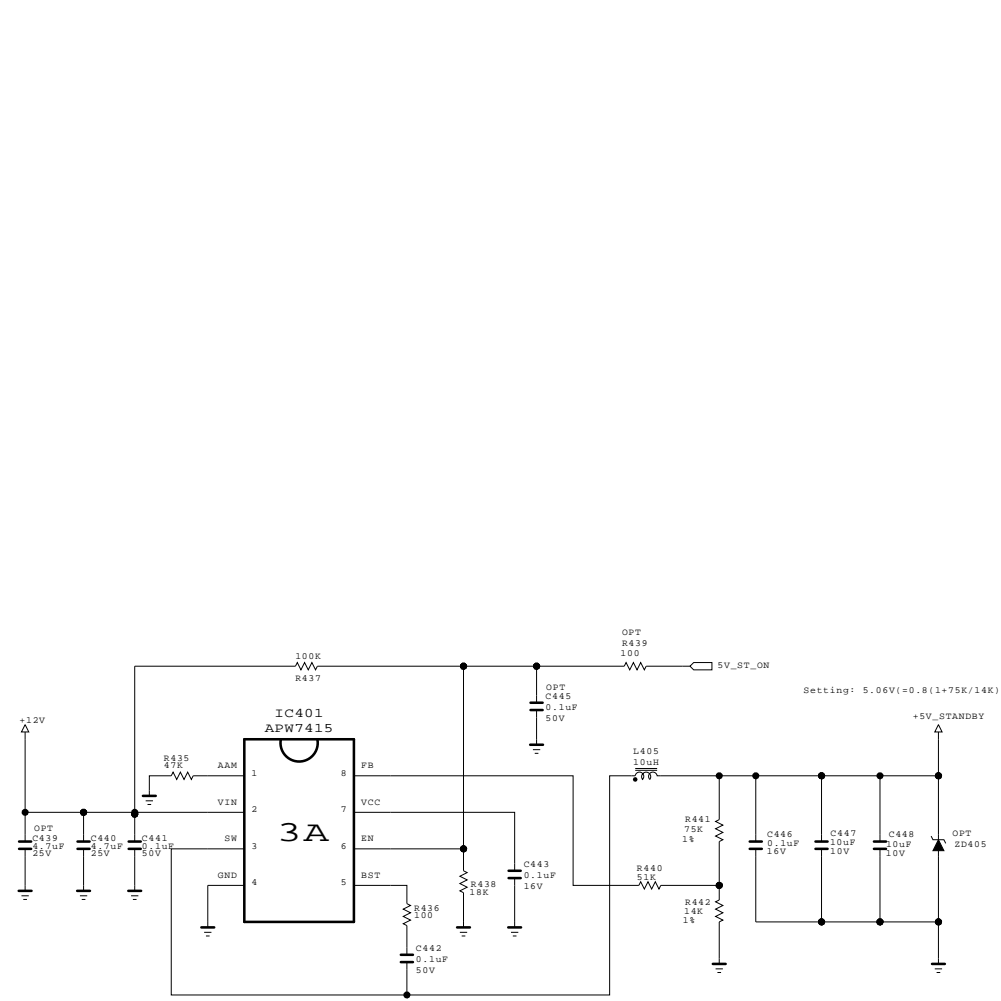
IC200 MST9U10Q1



MODULE-eDP



SCALER DC-DC BLOCK



THE \triangle SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE \triangle SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics



MODEL	UD58	DATE	2016.02.16
BLOCK	MAIN POWER	SHEET	4 / 4

