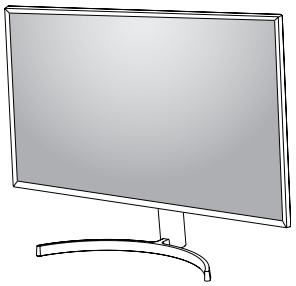
Internal Use Only

LED LCD MONITOR
SERVICE MANUAL

CHASSIS : LM71F

MODEL : 32UK50T

CAUTION
BEFORE SERVICING THE CHASSIS, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL62449365(1809-REV00)

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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

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

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.
If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.
Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)

With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 MΩ and 5.2 MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

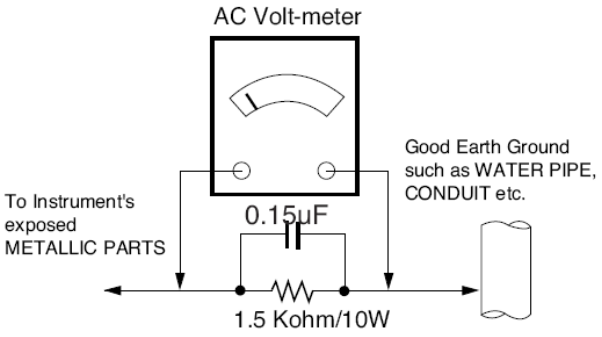
Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.

Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5 mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1

*Base on Adjustment standard

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SPECIFICATION

1. General Specification

*2. ** Provided accessory: #7/#8/#9/#10/#11/#12/#13*

No	Item		Content	Remark
1	Customer		BRAND	
2	User Model Name		32UK50T	
3	Sale region		Worldwide	
4	Feature		31.5" LCD MONITOR(UHD)	
5	Chassis Name		LM71F	
6	General Scope	External SW & Adj.	5-way joystick switch	
		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 ± 10%	Power cord can be changed according to region.
	Cable	HDMI	Length : 1.5m±0.05m / Shape : Detachable Type / Color : Black / Weight : 0.091kg± 10%	SET accessory P/N : EAD63954401
			CABLE : 100Ω±10Ω CONNECTOR : 100Ω±15Ω	
		DisplayPort	Length : 1.5m±0.05m Shape : Detachable Type / Color : Black / Weight : 0.095kg± 10%	SET accessory P/N : EAD63749401
			CABLE : 100Ω±5Ω CONNECTOR : 100Ω±10Ω	
9	Power		Output: DC 19V 3.42A, 65W Adapter Color: Black, Weight : 0.58kg ±10%, without vinyl bag	P/N : EAY62990906
10	Factory calibration report		0.002kg	SET accessory / Refer to BOM
11	Applying module list		P/No: EAJ64127601 / Specification: M315DJJ-K30	

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2.Signal Timing (Resolution)

1< Signal (Video & Sync) **>** – DisplayPort

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)	+	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	

Main Recommended Timing

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< 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	

6.1.2 HDMI Video input

	Factory support mode	Horizontal frequency	Vertical frequency
	(Preset Mode)	(KHz)	(Hz)
1	480P	31.5	60
2	720P	45	60
3	1080P	67.5	60
4	2160P	135	60

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6.1.3 Supporting timing

- Estabilisied I, Estabilisied II, Manufacturer Timing
- Standard Timing
- Detailed Timing (1Page)
- Detailed Timing (2Page)

EDID 내의 PC Timing									
수평 크기	수직 크기	주파수	HDMI1/2 (1.4)	HDMI 1/2 (2.0)	HDMI FreeSync Extended	HDMI FreeSync Basic	DP	DP FreeSync Extended	DP FreeSync Basic
640	480	60	●	●	●	●	●	●	●
800	600	60	●	●	●	●	●	●	●
1024	768	60	●	●	●	●	●	●	●
1152	864	60	●	●	●	●	●	●	●
1280	720	60	●	●	●	●	●	●	●
1280	800	60	●	●	●	●	●	●	●
1280	1024	60	●	●	●	●	●	●	●
1600	900	60	●	●	●	●	●	●	●
1920	1080	60	● ●	● ●	● ●	● ●	● ●	● ●	● ●
2560	1440	60	●	●	●	●	●	●	●
3840	2160	30	●	●	●	●	●	●	●
		60	-	●	●	●	●	●	●
VF min (hz)			56hz	56hz	40hz	48hz	56hz	40hz	48hz
VF max (hz)			61hz	61hz	61hz	61hz	61hz	61hz	61hz
HF min (khz)			30khz	30khz	30khz	30khz	30khz	135khz	135khz
HF max (khz)			135khz	135khz	135khz	135khz	135khz	135khz	135khz
Clock (Mhz)			300Mhz	600Mhz	600Mhz	600Mhz	560Mhz	560Mhz	560Mhz

EDID 2Page 영역의 Video Short Block Description							
수평 크기	수직 크기	주사방식	주파수	비율	HDMI 1.4	HDMI 2.0 HDMI FreeSync	DP DP FreeSync
640	480	P	59.94/60	4:3	●	●	●
720	480	P	59.94/60	4:3		●	
720	480	P	59.94/60	16:9	●	●	●
1280	720	P	59.94/60	16:9	●	●	●
1920	1080	I	59.94/60	16:9	●	●	
1920	1080	P	23.98/24	16:9		●	
1920	1080	P	29.97/30	16:9	●	●	
1920	1080	P	59.94/60	16:9	●	●	●
3840	2160	P	23.98/24	16:9		●	
3840	2160	P	25	16:9		●	
3840	2160	P	29.97/30	16:9		●	
3840	2160	P	50	16:9		●	
3840	2160	P	59.94/60	16:9		●	

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3. LCD Panel Characteristic

No	Item		Content	Remark
1	LCD Module Feature	Maker	INX	
		Type	VA	
		Active Display Area	31.5 inches(80.0051cm) (Aspect ratio 16:9)	
		Pixel Pitch [mm]	0.0603 [mm]X RGB X 0.18159 [mm]	
		Electrical Interface	V by 1	
		Color Depth	1.073 Billion colors	
		Size (Outline) [mm]	717.4(H)x413.85(V)x17.9(D)mm (Typ.)	
		Surface Treatment	AG type, 3H hard coating, Haze 25	
		Operating Mode	Transmissive mode, normally Black	
		Back light Unit	White LED	
		Color Gamut	DCI-P3 95%	

Standard Measurement Condition

- Ambient Luminance Level : dark (< 10 lux)
- Ambient Temperature : Normal Temperature(10 ~ 25 ℃)
- warm-up Time : More than 30min (at Full White Pattern)
- Input Signal : 3840X2160@60Hz
- Contrast : 70 / Brightness : Max. 100
- 6500K : Color Temperature Setting is 6500 K(if it's not special specification)
- Another Spec.: Product Specification Standard(LG(55)G1-1034)
- Cosmetic Spec. : LCD Module IIS Spec.

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4.EDID

2.1 Single EDID Information

No	Item	Content	16진 Data
1	Manufacturer ID	GSM	1E 6D
2	Product ID	HDMI1/2 : 23304 DP : 23305	5B 08 5B 09
3	Year/Week	Year :19 (2015) Week : 1(1주차)	19 / 1 Inserted at Production Line
5	Version/Revision	HDMI : 01 03 DP : 01 04	HDMI : 01 03 DP : 01 04
6	Serial Number	Refer to variable data file	Refer to variable data file Inserted at Production Line
8	Model Name	LG Ultra HD	-
9	Check Sum	Refer to variable data file	Refer to variable data file

1) GSM : Vendor Name which was registered in VESA

2) Fixed Vaule : Manufacturer ID, Model Name

3) Adjustable Value : Serial Number, Year/Week(Inserted at Production Line), Revision, Physical Address(Different from DP/HDMI1, HDMI2)

2.1.1.1 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

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2.1.1.2 HDMI2 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

Physical Address : HDMI2=20

2.1.1.3 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
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	03
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	AD

1)Physical Address : HDMI1=10

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2.1.1.4 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	20	00	B8	3C	20	00
0A0	60	01	02	03	67	D8	5D	C4	01	78	80	03	E3	0F	00	03
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	9D

Physical Address : HDMI2=20

2.1.1.5 HDMI EDID of FREE-SYNC ON → Extended mode

	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	28
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	1F
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	39	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	03
0B0	68	1A	00	00	01	01	28	3D	00	02	3A	80	18	71	38	2D
0C0	40	58	2C	45	00	58	54	21	00	00	1A	56	5E	00	A0	A0
0D0	A0	29	50	30	20	35	00	58	54	21	00	00	1A	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	BB

Physical Address : HDMI1=10

Physical Address : HDMI2=20

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2.1.1.6 HDMI EDID of FREE-SYNC ON → Basic mode

	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	30
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	17

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	39	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	03
0B0	68	1A	00	00	01	01	30	3D	00	02	3A	80	18	71	38	2D
0C0	40	58	2C	45	00	58	54	21	00	00	1A	56	5E	00	A0	A0
0D0	A0	29	50	30	20	35	00	58	54	21	00	00	1A	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	B3

Physical Address : HDMI1=10

Physical Address : HDMI2=20

2.1.2 DP EDID (DP1.2)

	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	09	5B	01	01	01	01
010	01	19	01	04	B5	3C	22	78	9E	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	4D	D0	00	A0	F0	70	3E	80	30	20
040	65	0C	58	54	21	00	00	1A	28	68	00	A0	F0	70	3E	80
050	08	90	65	0C	58	54	21	00	00	1A	00	00	00	FD	00	38
060	3D	1E	87	38	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	9D

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	11	71	44	90	04	03	01	23	09	07	07	83	01	00
090	00	02	3A	80	18	71	38	2D	40	58	2C	45	00	58	54	21
0A0	00	00	1E	56	5E	00	A0	A0	A0	29	50	30	20	35	00	58
0B0	54	21	00	00	1A	00	00	00	00	00	00	00	00	00	00	00
0C0	00	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	C8

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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
000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	09	5B	01	01	01	01
010	01	19	01	04	B5	3C	22	78	9F	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	4D	D0	00	A0	F0	70	3E	80	30	20
040	65	0C	58	54	21	00	00	1A	28	68	00	A0	F0	70	3E	80
050	08	90	65	0C	58	54	21	00	00	1A	00	00	00	FD	00	28
060	3D	87	87	38	01	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	42

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	11	71	44	90	04	03	01	23	09	07	07	83	01	00
090	00	02	3A	80	18	71	38	2D	40	58	2C	45	00	58	54	21
0A0	00	00	1E	56	5E	00	A0	A0	A0	29	50	30	20	35	00	58
0B0	54	21	00	00	1A	00	00	00	00	00	00	00	00	00	00	00
0C0	00	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	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
000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	09	5B	01	01	01	01
010	01	19	01	04	B5	3C	22	78	9F	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	4D	D0	00	A0	F0	70	3E	80	30	20
040	65	0C	58	54	21	00	00	1A	28	68	00	A0	F0	70	3E	80
050	08	90	65	0C	58	54	21	00	00	1A	00	00	00	FD	00	28
060	3D	87	87	38	01	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	42

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
080	02	03	11	71	44	90	04	03	01	23	09	07	07	83	01	00
090	00	02	3A	80	18	71	38	2D	40	58	2C	45	00	58	54	21
0A0	00	00	1E	56	5E	00	A0	A0	A0	29	50	30	20	35	00	58
0B0	54	21	00	00	1A	00	00	00	00	00	00	00	00	00	00	00
0C0	00	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	C8

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ADJUSTMENT INSTRUCTION

1. Application

1.1 This document is applied to LM71F chassis 32UD59/32UK50T 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)

Temperature : at 25℃±5°C / Relative humidity: 65 ±10% / Input voltage: 100 ~ 240V, 50/60Hz

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. Don't need write HDCP 1.4 key.

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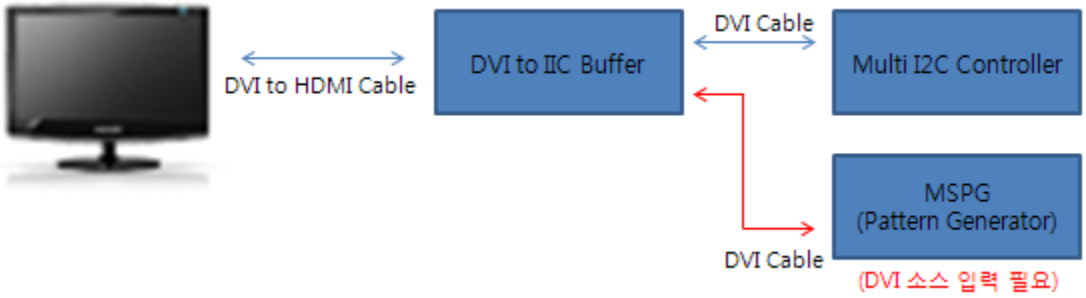
-. HDCP 2.2 KEY (Refer to 27MU67/27UD68/27UD88/27UD58/24UD58/32UD89 Writing process)

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(or 3840x2160), Full White		
Tolerance : -/+0.015 / Luminance Spec(min) : 250 Check condition : custom mode(out-going condition)		
Aging Time [min]	x	y
2	0.319	0.339
4	0.318	0.338
8	0.318	0.337
10	0.317	0.336
25	0.316	0.333
40	0.315	0.331
255	0.313	0.329

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

- Reference Model: 27MU67/27UD68/27UD88/27UD58/27UD88/32UD89
- Input: HDMI1/2 , Gray Pattern with Gamma correction using command using “Adjustment Command”
- This model must be calibrated Gamma2.2

■ Gamma calibration and verify

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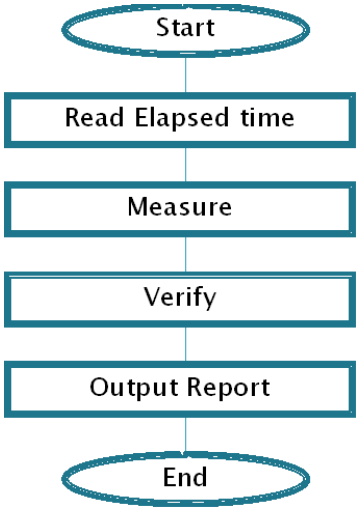


*Note: Manual W/B process

1) When in DC OFF Condition

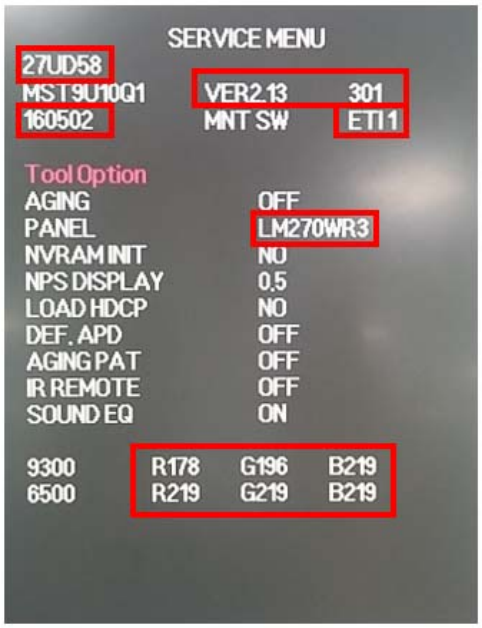
2) Press power button 3 times to left direction.

3) Press power button once to right direction.

4) DC on

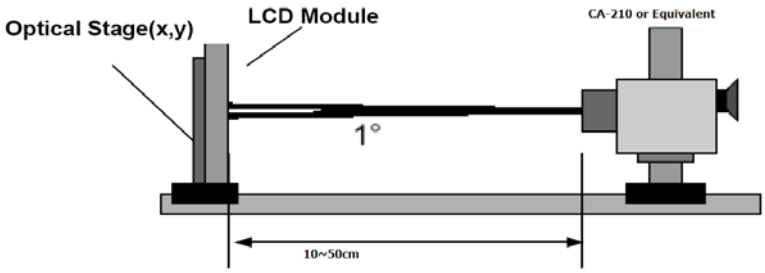
5) Press power button up to show **Navigation** OSD.

6) Press power button left to show Service Menu. (Select "Menu" in Navigation OSD)



: Variable contents
These contents can be changed by model or SW version

※ When doing Adjustment, Please make circumstance as below.



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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	Full Wide		
		Picture	Picture Mode	Custom		
			Picture Adjust	Brightness	100	
				Contrast	70	
				Sharpness	50	
				Super Resolution+	Off	
				Black Level	Depending on input signal High (RGB format) Low (YUV format)	
				HDMI ULTRAHD Deep Color	Off	
				DFC	Off	
			Game Adjust	Response Time	Normal	
				FreeSync	Off	
				Black Stabilizer	50	
			Color Adjust	Gamma	Mode 2	
				Color Temp	Custom	
				Red	50	
				Green	50	
				Blue	50	

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				Six Color (Red Hue/ Saturation Green Hue / Saturation Blue Hue / Saturation Cyan Hue / Saturation) Magenta Hue / Saturation Yellow Hue / Saturation	50	
			Picture Reset	Yes/No	No	
		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		
			OSD Size	Small	Small	
		Reset	Yes/No		No	
	TRANSPARENCY					
	Operating. Time		Within 2Hours			

6. Signal composition for adjustment

6.1 I2C (100K BPS)

6.2 COMMUNICATION START

START	6E	A	STOP	50Ms

※Until ACK BIT goes LOW, Repeat it.

6.3 Command form.

Command form use DDC2AB standard communication protocol.

START	6E	A	50	A	LEN	A	03	A	CMD	A	00	A	VAL	A	CS	A	STOP	

a. LEN : DATA BYTE number to send.

b. CMD : Command language that monitor executes.

c. VAL : FOS DATA

d. CS : Dada's CHECHSUM that transmit

e. DELAY : 50MS

f. 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	

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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**
	Module selection				**M315DJJK30**

6.5. EEPROM Data Write

6.5.1 Siganl TABLE

START	6E	A	50	A	84+n	A	03	A	CMD	A	ADH	A	ADL	A					
Data 1	A	. . .		Data n	A	CS	A	STOP	Delay 20m										

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

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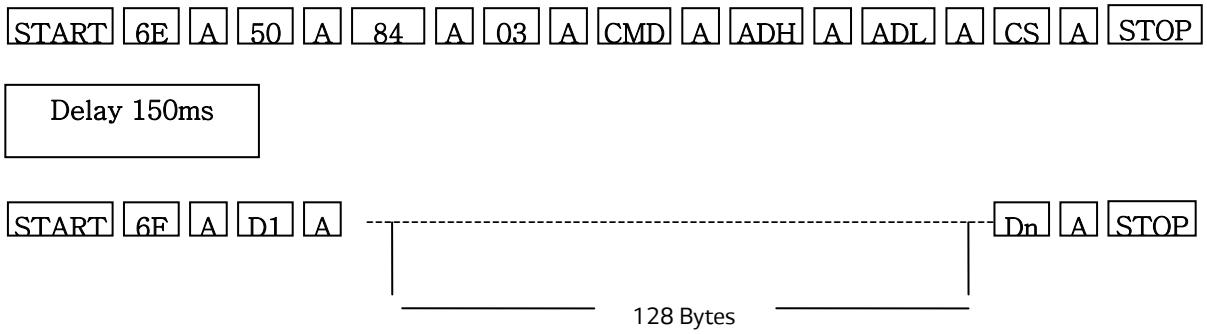
SyncFlags,HPeriodH, HPeriodL, VtotalH,VtotalL, SrcHTotalH, SrcHTotalL

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

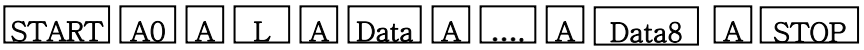
EEPROM access by using DDC2B protocol

■ 1-Byte write

L : 0x00~0x7F

D : data

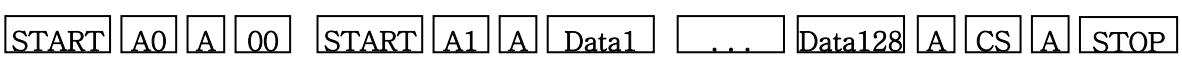
■ 8-byte write



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

6.6.5 EDID Read

DDC2B Command.(A0/A1)



- 128 Byte transfer of EDID Buffer of MICOM

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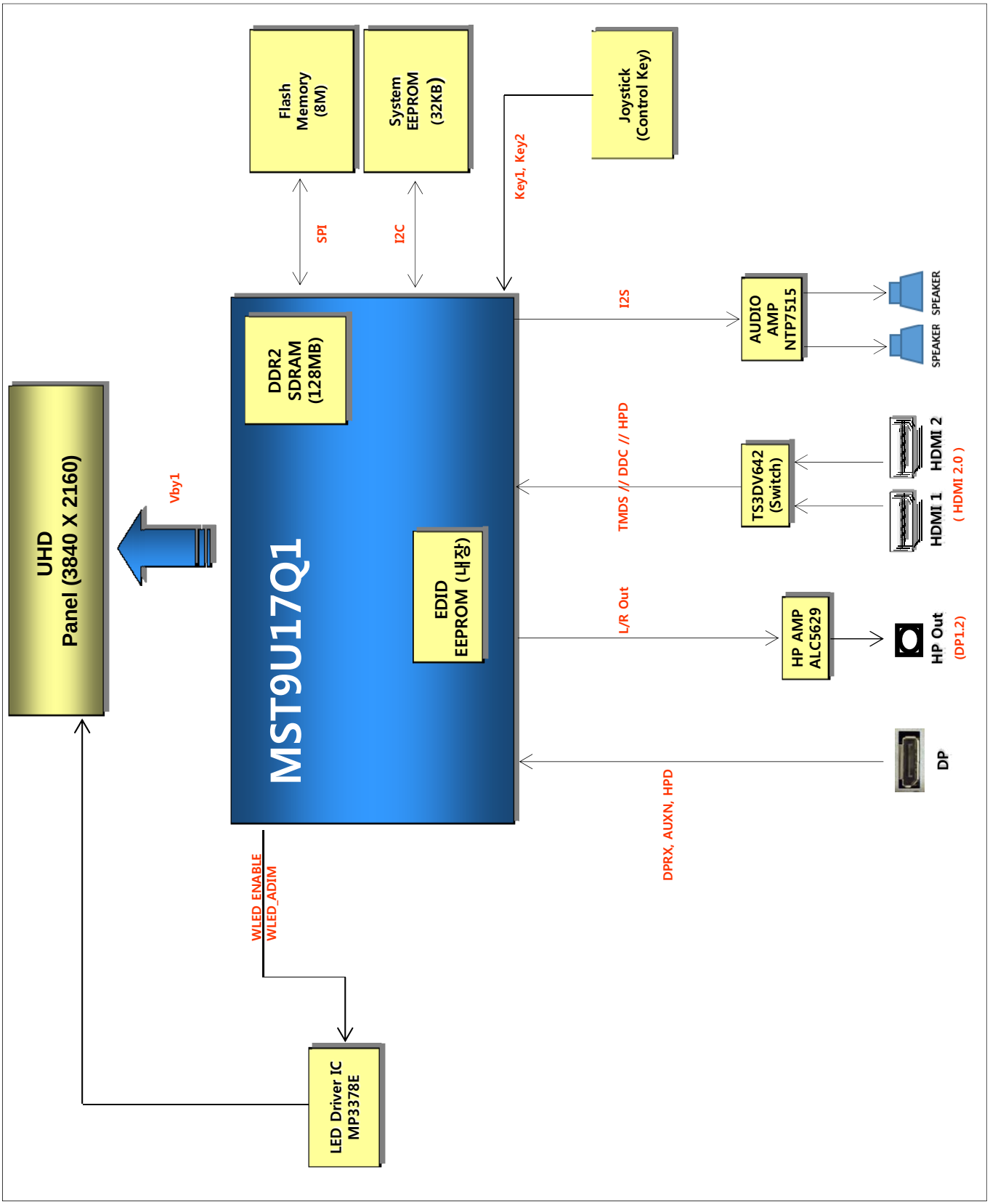
BLOCK DIAGRAM



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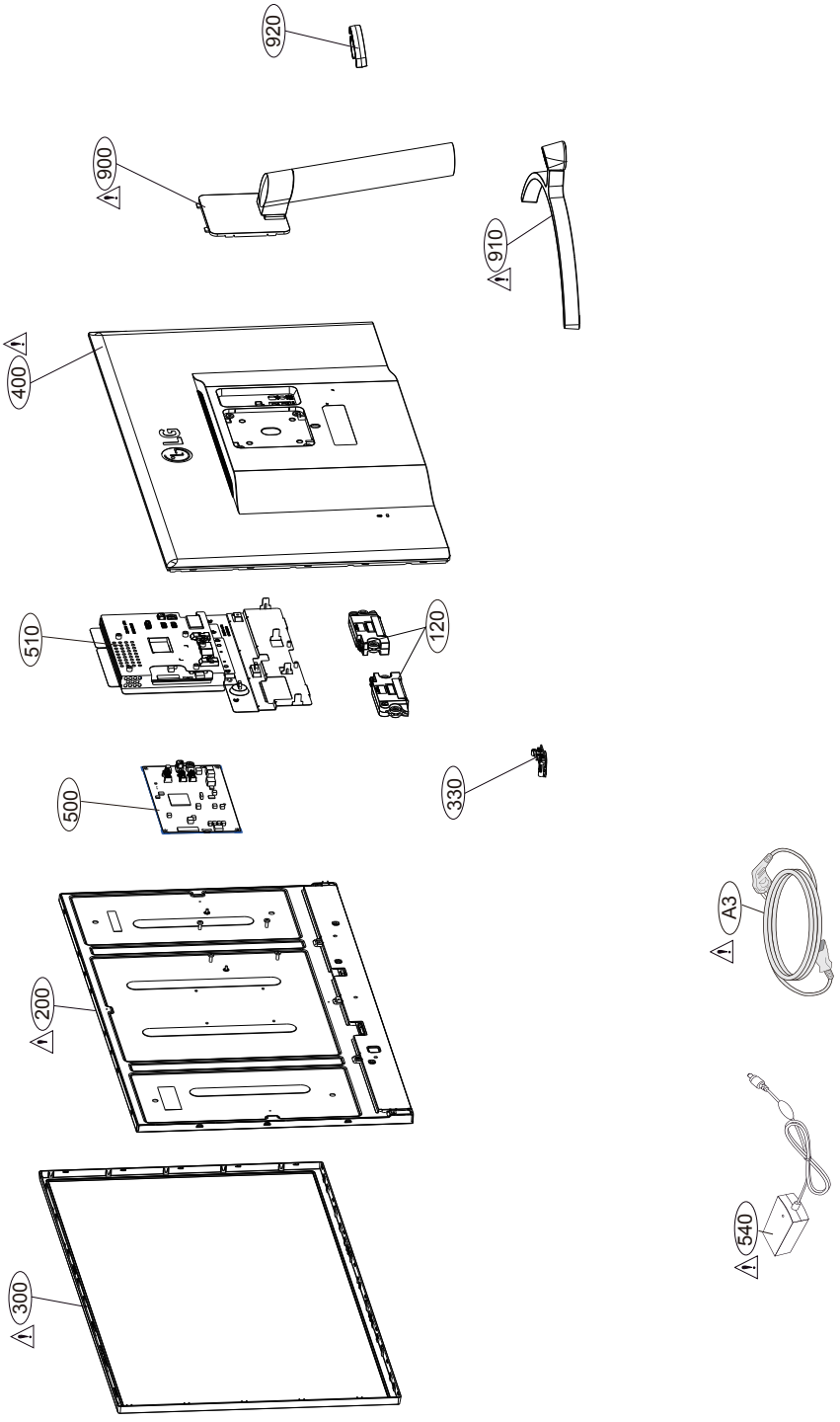
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ 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 Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.



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Product Disassembly instructions for End-of-Life

Product Identification:

Marketing Name / Model	Description
32UK550	32" LED monitor

Purpose: The document is intended for use by end-of-life recyclers or treatment facilities. It provides the basic instructions for the disassembly of products to remove components and materials requiring selective treatment.

1. Tools Required

List the type and size of the tools that would typically be used to disassemble the product to a point where components and materials requiring selective treatment can be removed.

Tool Description	Tool Size (if applicable)
Screw driver	

2. Product disassembly Process

2.1 List the basic steps that should typically be followed to remove components and materials requiring selective treatment :

2.2 OPTIONAL : Depending upon the complexity of the disassembly process, a graphic depicting the locations of items contained within the product which require selective treatment (with descriptions and arrows identifying locations) can be inserted below:

2.3 How to describe the basic steps to disassembly a components.

1) Provide a picture of disassembly process
2) All the screws are showed in the picture
3) All the PCBAs are showed in the picture
4) LCD panel are showed in the picture
5) All the accessories like remote controller, batteries, and cables are showed in the picture

3. Related regulations : WEEE directive, EPEAT

Fig.1 Put the set on a soft plane.

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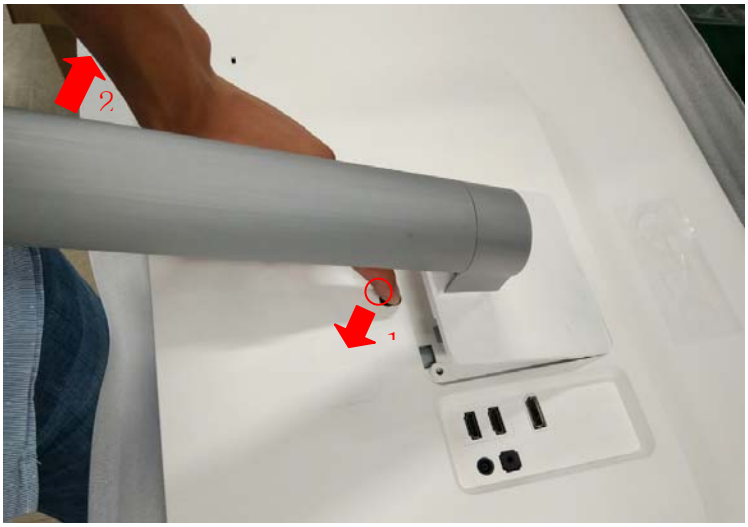

Fig.2 Push button and lift the stand body.

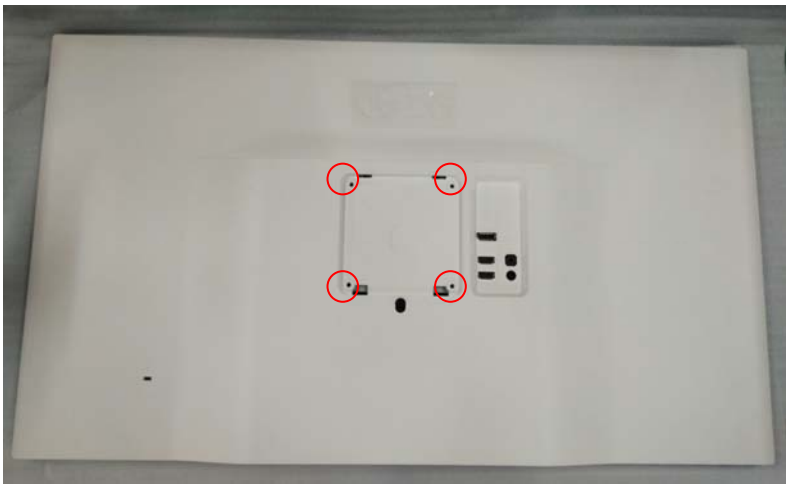

Fig 3 Remove the Screw(4EA)

Fig 4 overturn the set and disassemble the latches of three edges.

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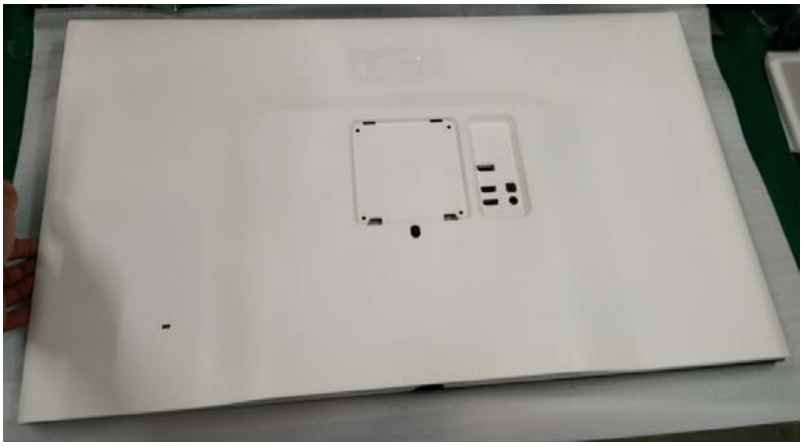

Fig 5 reoverturn the set and disassemble the back cover.

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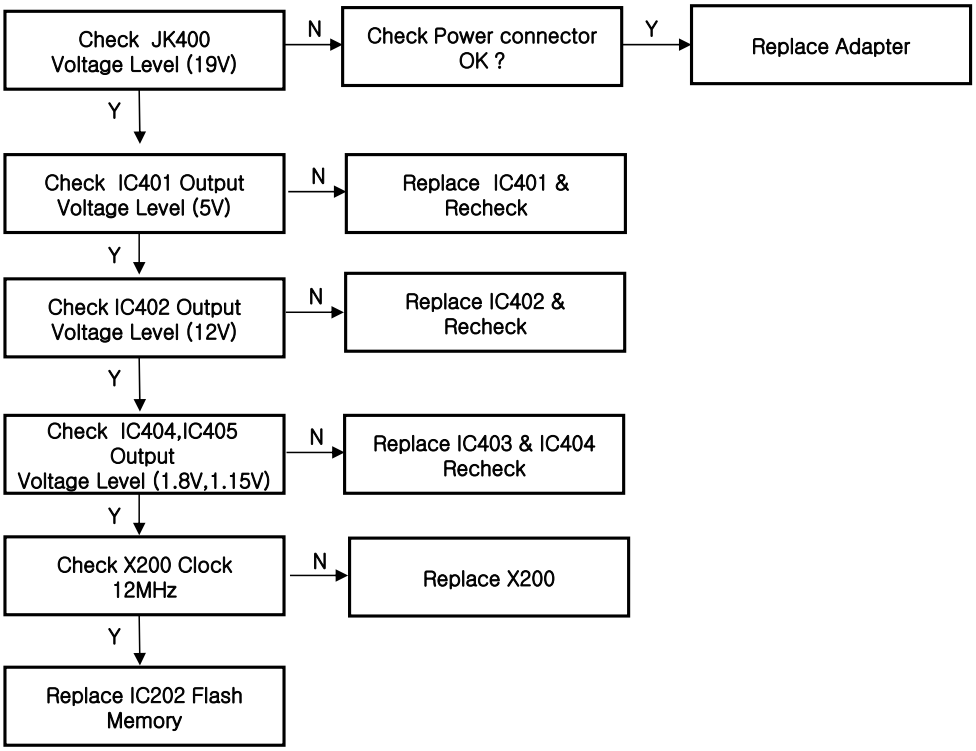
Trouble shooting : No Power

First of all, Check whether there is SVC Bulletin in GCSC System for these model.



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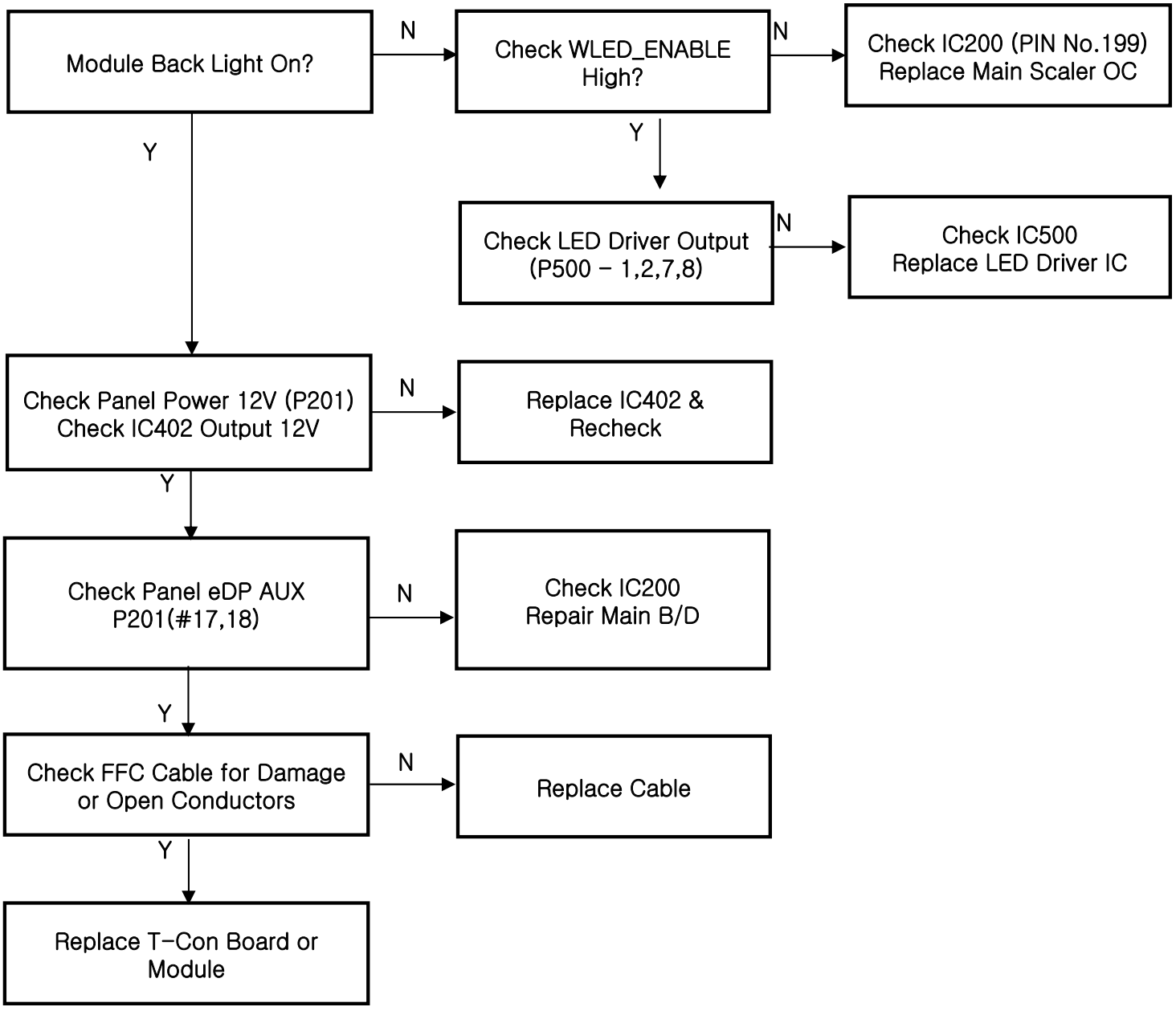
Trouble shooting : No Screen on



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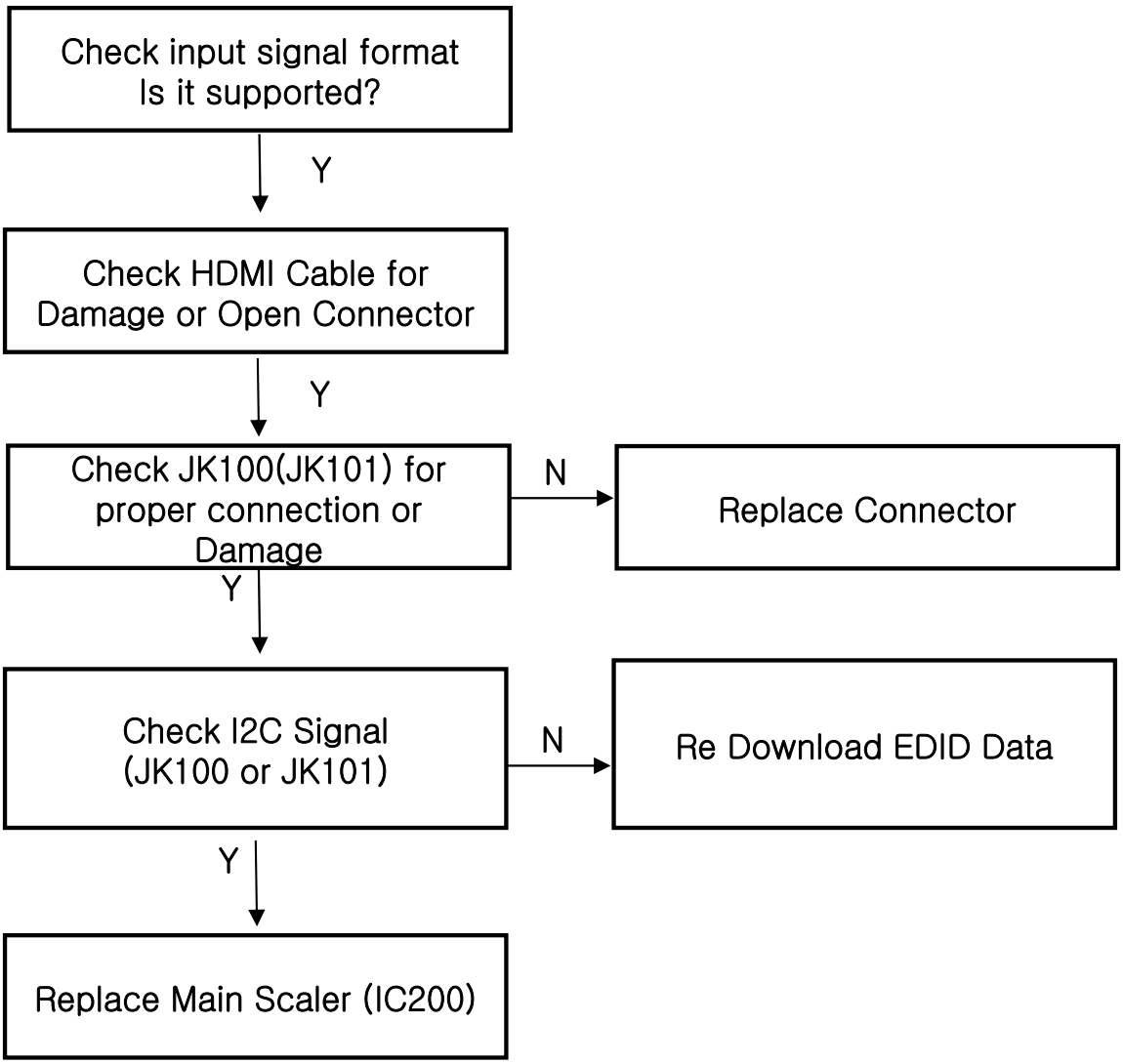
Trouble shooting : No Video – HDMI



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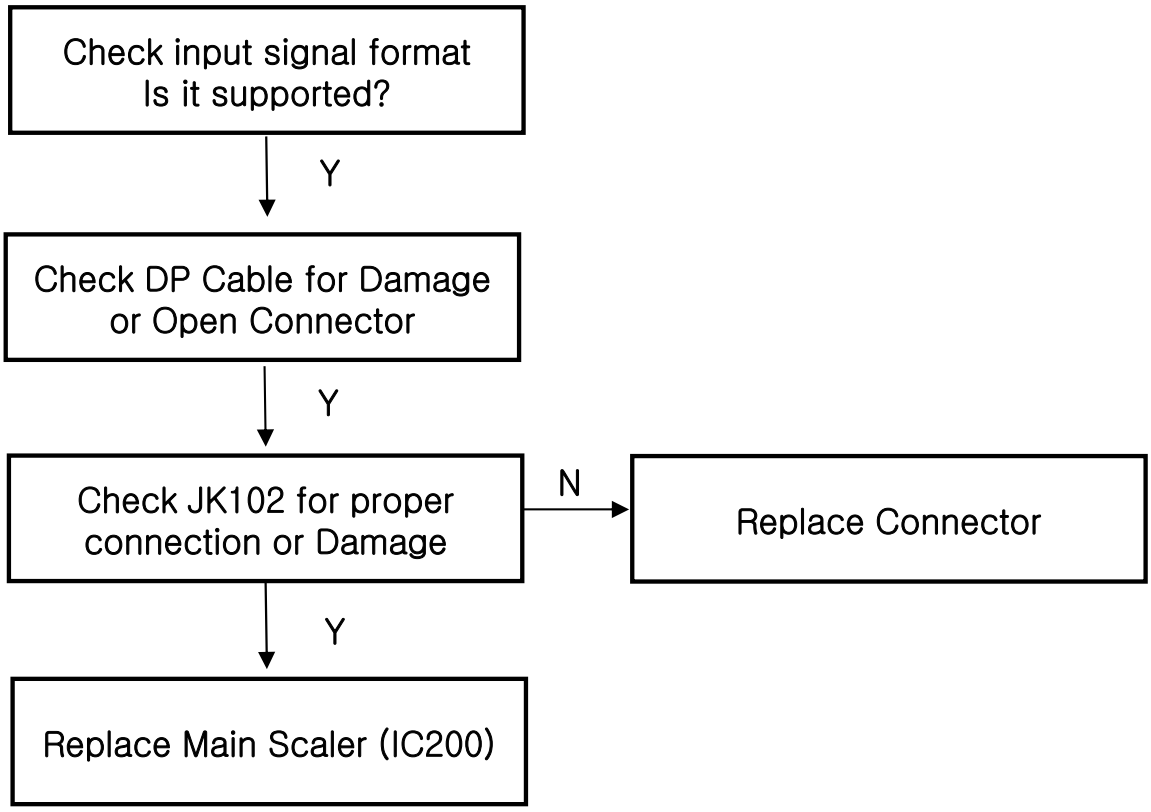
Trouble shooting : No Video – DP



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