



SPECIFICATION



LW550JUX-HMA1

55" - FHD - DP/HDMI

Version: 1.1

Date: 09.11.2021

Note: This specification is subject to change without prior notice

SPECIFICATION FOR APPROVAL

() Preliminary Specification

(●) Final Specification

Title	55.0" Direct Bonding OLED
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BUYER	General
MODEL	

SUPPLIER	LG Display Co., Ltd.
*MODEL	LW550JUX
SUFFIX	HMA1

*When you obtain standard approval,
please use the above model name without suffix

APPROVED BY	SIGNATURE	DATE
/		
/		
/		

Please return 1 copy for your confirmation with your signature and comments.

APPROVED BY	SIGNATURE	DATE
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TV Development Dept.
LG Display Co., Ltd.

Product Specification

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RECORD OF REVISIONS

Ver. 1.1 3 / 70

Product Specification

1. DIRECT BONDING ASS`Y

1-1. GENERAL DESCRIPTION

1-1-1. OLED Board Ass`y spec.

LW550JUX-HMA1 is a 55inch OLED with bonding glass. The display resolution is 1920(H) x 1080(V) and 1.07B colors (RGB 10-bits data).

*Specification

[OLED Panel without bonding glass]

Display	Panel	OLED of Oxide TFT
	Size	54.64inches(Diagonally)
	Display Area	1209.6 x 680.4mm
	Aspect Ration	16 : 9
	Resolution	1920 x 1080 Pixel @120 Hz
	Support Color	1.07 Billon colors
	Luminance of white	400/150 cd/m ² (APL25%/ 100%, Typ.)
	Transmittance	38%(Typ.)
	Color Viewing Angle	R/L 120 (min.), U/D 120 (min.)
	Input Signal	HDMI x 1 /DP(in) x1 / DP (out) x1
	Power	100~240VAC @ 50~60Hz
	Consumption	200W(on/Typ.)
Weight	Panel w/ glass	15Kg
	Board SET	2Kg
	Total	17Kg
Operating	Temperature	0°C to 50°C

Product Specification

1-1-2. Glass spec.

Optical Property

Category	Spec	Remark
Transmittance(Y)	> 86%	Based on View Area
Haze	< 2.5%	

Mechanical & tempered Characteristic

Category		Spec	Remark
Mechanical	Dimension-1 (length)	1255.5 +/- 0.5mm	Appendix- V
	Dimension-2(width)	800.0 +/- 0.5mm	Appendix- V
	Dimension-3(Hole1 Diameter)	10.0 +/- 0.5mm	Appendix- V
	Dimension-4(Hole2 Diameter)	26.0 +/- 0.5 mm	Appendix- V
	Dimension-5(Glass Thickness)	4.0 +/- 0.2 mm	Appendix- V
	Breaking strength(Ball Drop Test)	500g,Unbreakable at 1mm	Steel Ball
	Surface hardness	> 6H	
Chemical tempered	DOL(Depth of layer)	> 8um	
	CS(Compressive stress)	> 450MPa	

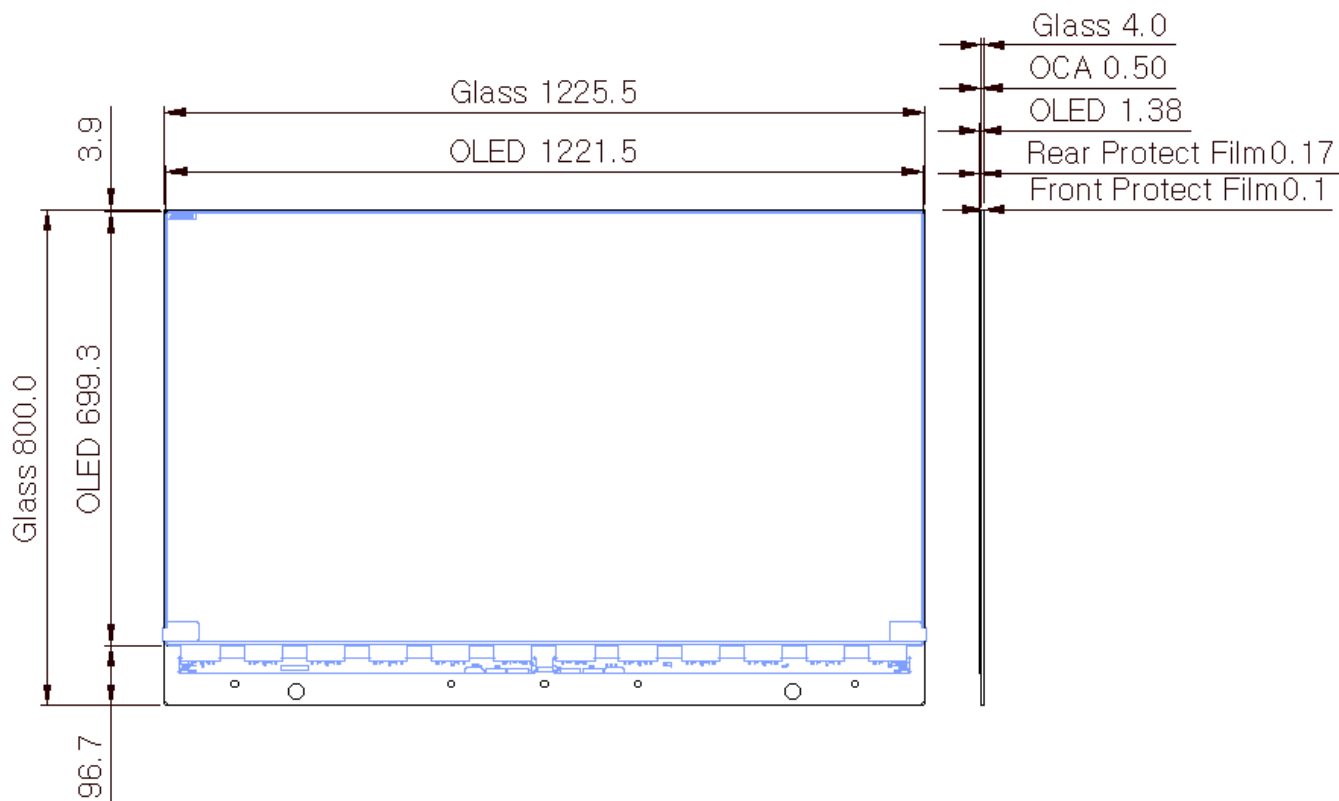
Glass Material

Component : SiO₂ : 71-73%, Na₂O: 12-15%, CaO : 8-11%

Notes

1. OCA Characteristics is defined to APPENDIX.
2. Glass Appearance Specifications is defined to APPENDIX.

Product Specification

1-2. MECHANICAL CHARACTERISTICS**1-2-1. OLED Direct bonding drawing**

Unspecified Glass tolerance : $\pm 1.0\text{mm}$.

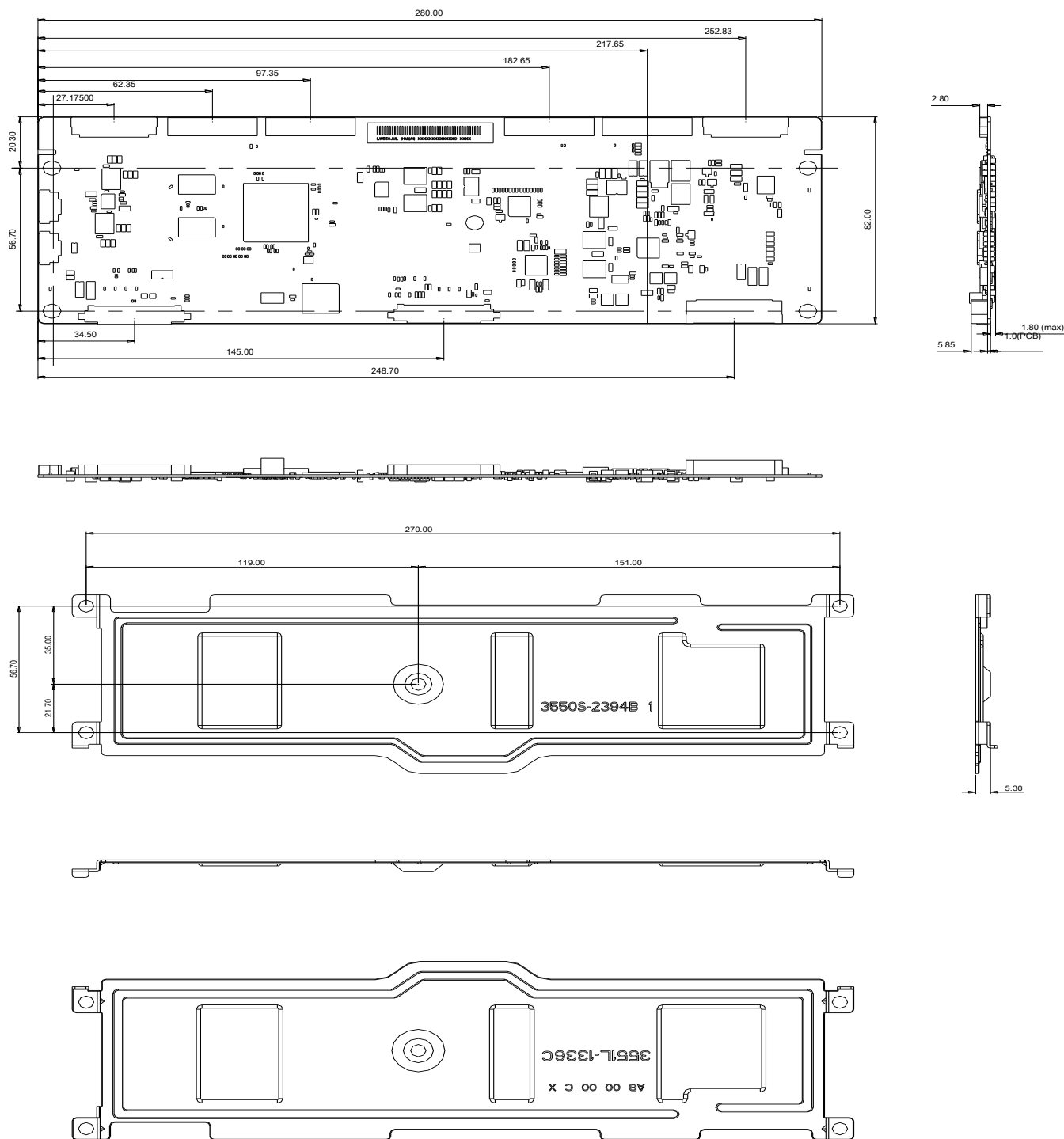
Unspecified OLED tolerance : $\pm 1.0\text{mm}$.

Unspecified Bonding tolerance : $\pm 0.05\text{mm}$.

Unspecified OCA tolerance : Typ. 0.5mm / min 0.3 ~ max 1.0mm

Product Specification

1-2-2. Control Assembly & Control PCB Shield drawing



NOTE

1. Unspecified tolerance is $\pm 1.0\text{mm}$

Product Specification

1-3. Reliability**1-3-1. OLED Direct bonding Ass'y**

No.	Test Item	Condition
1	High temperature storage test	Ta= 60°C 240h
2	Low temperature storage test	Ta= -20°C 240h
3	High temperature operation test	Ta= 50°C 50%RH 240h
4	Low temperature operation test	Ta= 0°C 240h
5	Pallet packing vibration test (non-operating)	Wave form : random Vibration level : 1.15Grms Bandwidth : 1-200Hz Duration : Z, 60 min
6	Humidity condition Operation	Ta= 40 °C, 90%RH
7	Altitude operating storage / shipment	0 - 15,000 ft 0 - 40,000 ft

1-4. INTERNATIONAL STANDARDS

1-4-1. Safety (Only OLED Board ass'y without bonding glass)

- 1) IEC 62368-1, The International Electro-technical Commission(IEC).
Audio/video, Information and Communication Technology Equipment - Safety Requirements.
- 2) EN 62368-1, European Committee for Electro-technical Standardization (CENELEC)
Audio/video, Information and Communication Technology Equipment - Safety Requirements
- 3) UL 62368-1, UL LLC.
Audio/video, Information and Communication Technology Equipment - Safety Requirements
- 4) CAN/CSA C22.2 No.62368-1, Canadian Standards Association (CSA).
Audio/video, Information and Communication Technology Equipment - Safety Requirements
- 5) IEC 60950-1, The International Electro technical Commission (IEC).
Information Technology Equipment - Safety - Part 1 : General Requirements
- 6) EN 60950-1, European Committee for Electro-technical Standardization (CENELEC)
Information Technology Equipment - Safety - Part 1 : General Requirements

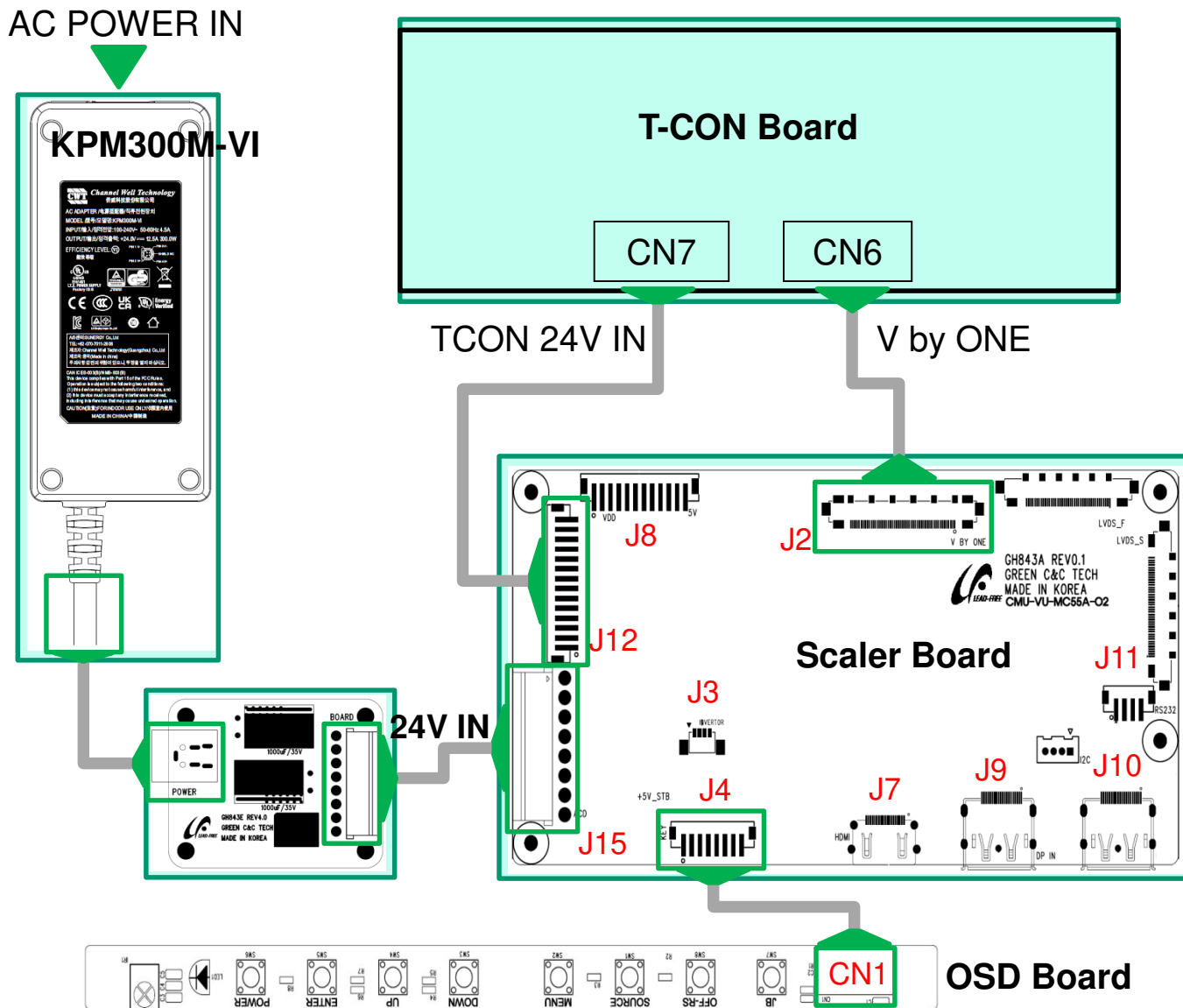
1-4-2. Environment (Only OLED Board ass'y without bonding glass)

- 1) RoHS, Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council

2. OLED DRIVING BOARD

2-1. GENERAL DESCRIPTION

2-1-1. Board block diagram



Notes

1. Scaler Board connector Pin map is defined to APPENDIX.
2. Adapter Board connector Pin map is defined to APPENDIX.
3. T-CON Board connector Pin map is defined to APPENDIX.

Product Specification

2-1-2. Scaler Board Specification

Item	Description		Remark
Model Name	GH843A(M2)		
LCD Module	FHD		V-by-One
Signal input	HDMI Input, DP Input		
Resolution support	H: 31 ~ 135 KHz		
	V : 56~120 Hz		
OSD Control	Power, Enter, Up, Down, Menu, Source, JB ,OFF-RS		
Remote Controller	Infrared-Rays NEC Format		
Signal Connector	Analog	-	
	Digital	19Pin HDMI Connector	
		20Pin Display Port Connector	

Item	Value	Unit
Overall Dimensions		
Width	163	mm
Length	80	mm
Height	27	mm
Max. Output Resolution	1920 x 1080	pixels
Input Impedance	12	K Ohm
Syne. Polarities	+/-	
Supply Voltage	24	Vdc
Output Signal Type	V-by-One	Vdc
Operating Temperature	0~45	°C
Storage Temperature	-20~60	°C

Product Specification

2-1-3. Adapter Specification

1. Input Voltages

:Industrial power supply shall operate within input specification from 90Vac to 264Vac or provide automatic switching between high line and low line input ranges. The table below shows common input voltage range.

Input Range	Minimum	Nominal	Maximum	Unit
	90V	100V-240V	264V	Vac Rms

Table 1 – Input Voltage

2. Input Frequency

:The industrial power supply shall operate within specification from 47 to 63 Hz.

3. Input Current

:Maximum steady state input current shall not exceed 4.5 A for any line voltage specified in 1.

4. Power Factor

:0.90Min at 100Vac/60HZ or 240Vac/50HZ full load

5. AC Inrush Current

-At 240Vac, 50Hz, 25 degrees C, cold start. It should not interrupt line fuse or cause damage to the industrial power supply either at cold or warm start.

-At 100Vac, 60Hz, 25 degrees C, cold start. It should not interrupt line fuse or cause damage to the industrial power supply either at cold or warm start.

-The inrush current must be limited to the extent that no damage is done to the supply under any specified line, load, and temperature conditions. The inrush current shall not cause any external protection devices (i.e. fuses) to trip.

6. Leakage Current

:3.5mA maximum at 240Vac 50Hz

7. Insulation Resistance

:Insulation resistance shall be more than 20M ohm between primary and secondary

8. Input Current Protection

:A fuse with rating of 4 A / 250 V (Time Lag type) shall be installed on the input line side near the input connector and no any electrical components before.

9. Output Power

-The total output power, under steady state conditions, shall not exceed 300 W.

Product Specification

2-1-3. Adapter Specification

10. Output Voltage and Current

:Under any combination of line and load variation and environmental conditions, all outputs shall remain within tolerance as defined in Table 2. Output voltage(s) shall be measured at the load side of output connector.

Output Voltage	Voltage Range		Current Range		
	Lower Limit	Upper Limit	Minimum Load	Full rated load	PK Load
+24V	22.80V	25.20V	0A	12.5A	-

Table 2 – Output Voltage and Current

11. Over Voltage Protection

:The power supply shall provide with over voltage protection such that under any single component failure. The power supply provides output over voltage protected in latch off by zener diode, and no damage to customer device.

12. Over Current Protection

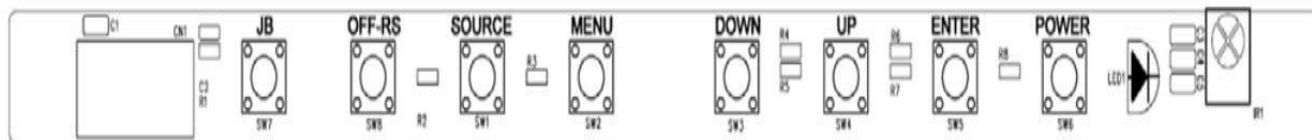
:The power supply shall be protected when operating any output in overload condition. The power supply shall be shut down and no any damage when the over current condition occurs on the output, and It will be auto-recovered when the failure is removed.

Output Voltage	Over Current Protection		Test Condition
	Lower Limit	Upper Limit	
+24V	13.75A	20A	Input Voltage: 100Vac 60Hz or 240Vac 50Hz

Table 3 – Over Current Protection

Product Specification

2-1-4. OSD Board Function



1. POWER(SW6)
 - Monitor power ON/OFF Key function
 - To turn off the monitor press the key for 2 seconds or more
2. ENTER(SW5)
 - OSD main menu : Enter/Select Key function
 - No OSD(Information) : Sub OSD shows whether input signal cable, resolution, pixel clock, HDCP enable / disable.
3. UP(SW4)
 - UP Key function (in OSD main menu)
4. DOWN(SW3)
 - OSD main menu : DOWN Key function
5. MENU(SW2)
 - OSD main menu : Return to the previous menu (Exit Key function)
 - No OSD : This button will enable the main OSD menu
6. SOURCE(SW1)
 - No OSD : Displays the OSD window for the input signal, and You can set the input status.
 - For example.. Display port, HDMI, Auto Select can be set either.
7. OFF_RS(SW8)
 - OFF RS is one of the compensation functions. Press and hold the OSD key for more than 2 seconds to activate it.
8. JB(SW7)
 - JB is one of the compensation functions. Press and hold the OSD key for more than 2 seconds to activate it.
9. LED(LED1)
 - Hyper RED Color / Super Yellow Color

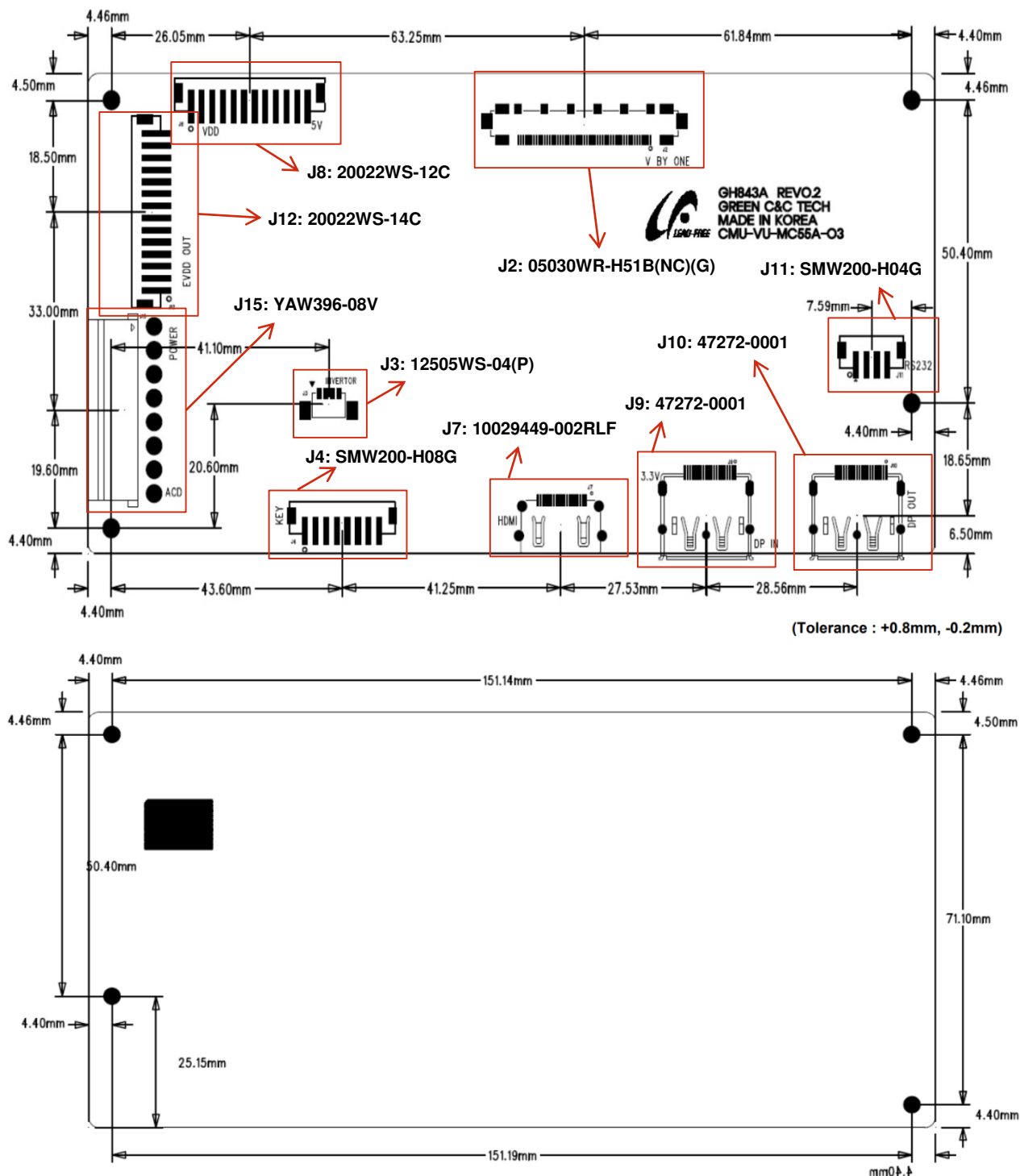
Notes

1. OSD Board function manual is defined to APPENDIX.

2-2. MECHANICAL CHARACTERISTICS

2-2-1. Scaler Board Drawing

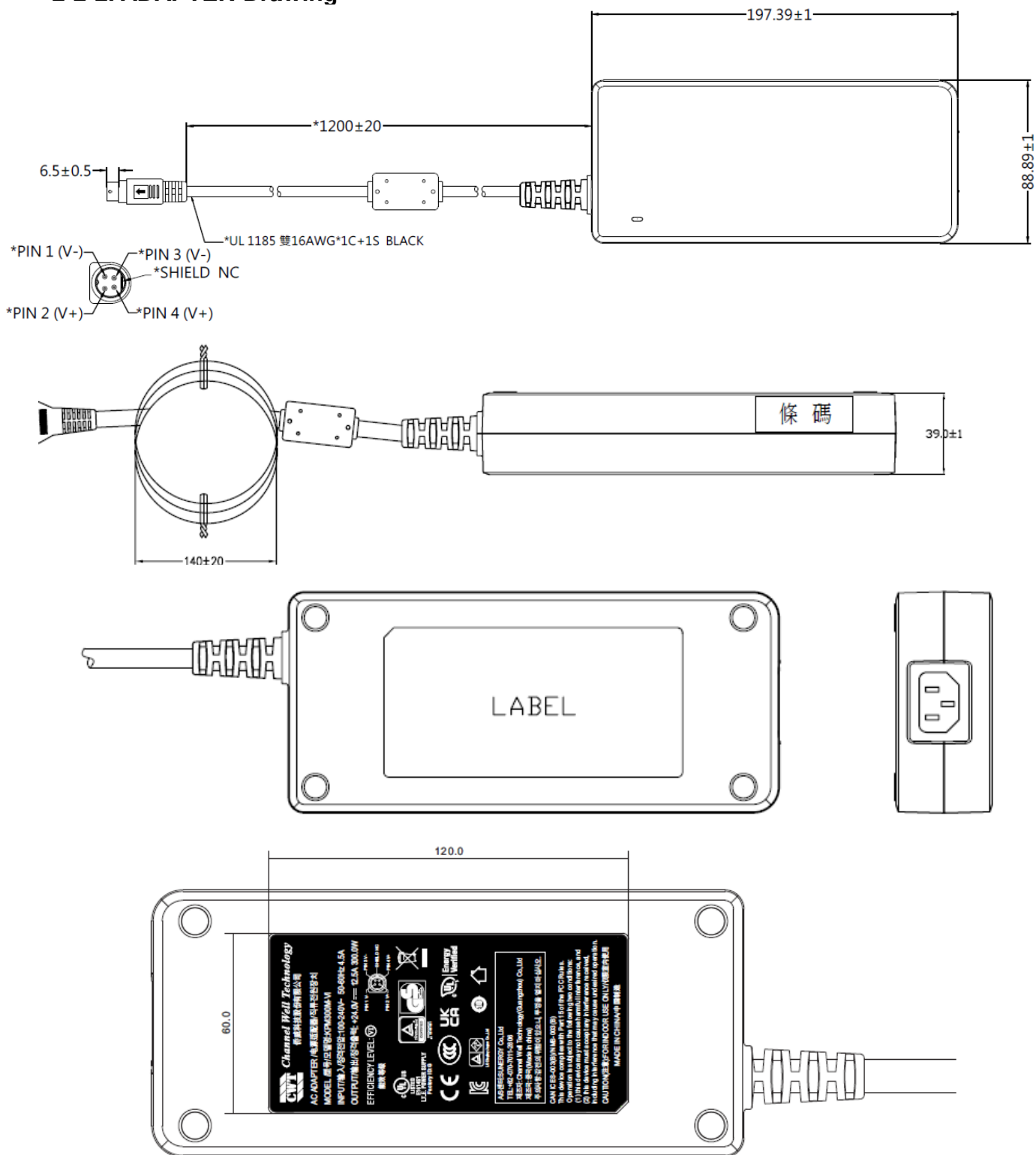
(Tolerance : +0.8mm, -0.2mm)



(Tolerance : +0.8mm, -0.2mm)

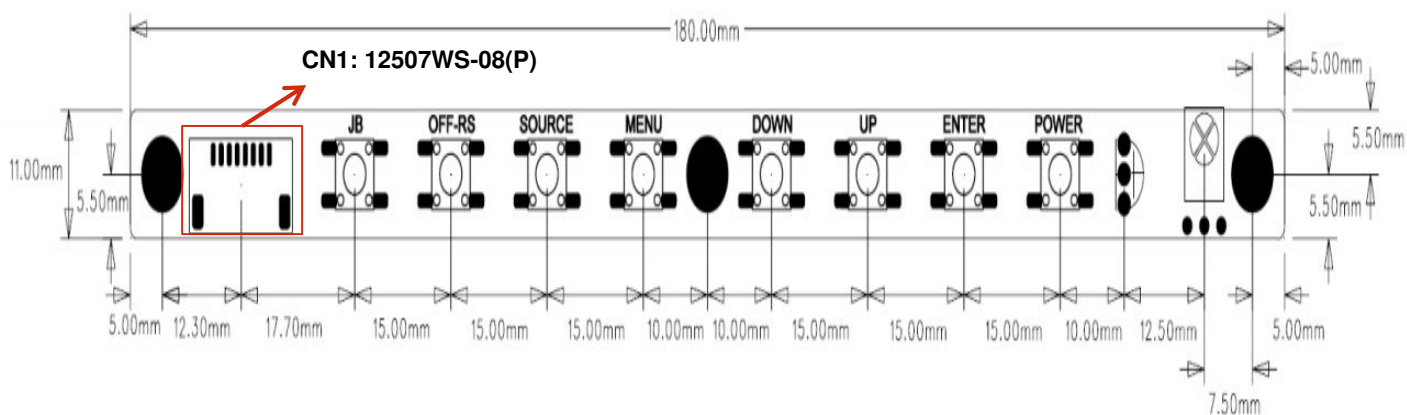
Product Specification

2-2-2. ADAPTER Drawing



2-2-3. OSD Board Drawing

(Tolerance : +0.8mm, -0.2mm)



Product Specification

2-3. Reliability**2-3-1. Scaler Board Reliability**

No	Test Item	Test Condition	Time or cycle
1	HTOL(High Temperature Operating Life)	Temperature : 60°C	250 hrs
2	THB(Temperature, Humidity, Bias Test)	Temperature : 60°C, Humidity : 85%	250 hrs
3	HTS(High Temperature Storage)	Temperature : 85°C	250 hrs
4	LTOL(Low Temperature Operating Life)	Temperature : 0°C	250 hrs
5	LTS(Low Temperature Storage)	Temperature : -30°C	250 hrs
6	Thermal Shock	Ta=-30°C(30min) → Ta=80°C(30min) Power Off Storage	50 cycles

Product Specification

2-3-2. Adapter Reliability

1. OverShoot

:During turn on or turn off, the output overshoot shall not exceed nominal output voltage by more than 10% , and output shall not change its polarity with respect to its return line.

2. Short Circuit Protection

:Power supply shall have self-limiting protection to protect against short circuit or overload conditions. No damage to the power supply shall result from a continuous or intermittent short circuit condition. It will be auto-recovered when the failure is removed.

3. Hold-Up Time

:Hold-up time shall be a minimum of 8 mS at 100Vac / 60Hz input.

4. Temperature

:Operation within specification: -10 to 40 degrees C.

Storage: -20 to 85 degrees C

5. Audible noise

:There is no audible noise can be heard when it work with rated spec.

-Test condition: The distance between microphone and the object should be 30cm spec < 30 BA.

6. Efficiency

-Active average mode Efficiency (watt out / watt in) shall be a minimum of 89.00 % at 230vac/50Hz.

-Active average mode Efficiency (watt out / watt in) shall be a minimum of 89.00 % at 115vac/60Hz.

-Complies to EPA DOE standard specification and EU CEC standard specification (Level VI).

:calculate the model is single average active mode efficiency for each test voltage by testing at 100%,75%,50%,and 25% of rated current output and then computing the simple arithmetic average of these four values respectively at 115V/60HZ and 230V/50HZ test result for reference.

-Efficiency (watt out / watt in) shall be a minimum of 79.00 % at 10% full load.

-Note: when testing efficiency, adapter needs to electrify to perform after full load 60 minutes Input voltage 115Vac 60Hz or 230Vac 50Hz

7. Turn On Delay Time

-Output shall reach steady state within 3 seconds of turn on at 100Vac or greater.

-Output shall reach steady state within 2 seconds of turn on at 240Vac or greater.

8. Dynamic Load

-Power supply output voltage tolerance shall be complied with $\pm 10\%$.

-Step load change: from 50% to100% Load on the output.

-Dwell Time: 100Hz & 1 KHz 50% duty.

-Slew rate: 0.5A/uses

Product Specification

2-3-2. Adapter Reliability**9. HUMIDITY**

- Operation: 10% to 90% relative humidity, non-condensation.
- Storage: 5% to 95% relative humidity, including condensation.

10. VIBRATION AND SHOCK

:The power supply shall be designed to withstand normal transportation vibration per MIL-STD-810F, method 514 and procedures X, as it is mounted in the chassis assembly and packed for shipping.

11. ALTITUDE

:The power supply shall operate properly at any altitude between 0 ~ 16,404 feet (5000 meter) above sea level, and withstand storage at 50,000 feet.

12. CALCULATED MEAN TIME BETWEEN FAILURES (MTBF)

:The MTBF for the power adapter shall equal or exceed 100,000 hours when operated at full rated load in an ambient temperature of 25 degree C.

13. BURN-IN**Burn-in test:**

- Test condition: 110Vac / 220Vac 50Hz, with 100% maximum load at $40 \pm 2^{\circ}\text{C}$ ambient temperature.
- Test method: burn-in 110 minutes; and 30 seconds "ON", 30 seconds "OFF" within 5 minutes, then 5 minutes "ON"
- Test criteria: during this conditioning the power supply output normal and no damage or hazardous condition will occur.

ORT and life test:

- Input condition: 110Vac / 220Vac 50Hz, "ON/OFF" 10 times within 5 minutes, 45 minutes "ON" 45 minutes "OFF",
- Test condition: cycle by cycle test 168 hours with 100% maximum load at $40 \pm 2^{\circ}\text{C}$ ambient temperature.
- Test criteria: during this conditioning the power supply output normal and no damage or hazardous condition will occur.

14. EMI

- VCCI Class-B
- FCC 15(Class-B, 115Vac operation)
- CISPR 22 Class-B limits
- EN55022 (1998+A1:2000+A2:2003 Class-B limits)
- 47 CFR Part 15, Subpart B, Class B limits
- GB 9254 ITE Emissions Latest Edition

15. DIELECTRIC STRENGTH

- Primary to secondary: 1500VAC.
- Test time: 60 second
- Cut-off current: 10mA max
- Arcing current: 10mA max

Product Specification

2-3-2. Adapter Reliability

16. SURGE

- It is referring to EN61000-4-5 IEC61000-4-5:2001 Level 4.
- Differential mode surge immunity: 1KV
- Common-mode Surge Immunity: 2KV
- * Determination level: Criteria A (Product testing and testing before and after any change in function is not).

17. ELECTROSTATIC DISCHARGE ESD

- It is referring to EN61000-4-2, IEC61000-4-2:2001, IEC801-2 Level 3.
- Contact electrostatic discharge: + - 6KV.
- Air electrostatic discharge: + - 8KV.
- * Determination level: Criteria A (Product testing and testing before and after any change in function is not).

18. RF IMMUNITY

:It is referring to IEC61000-4-3 Class A 3V/m

19. ENVIRONMENT STANDARDS

- RoHS Regulation
- The RoHS compliance symbol will be included on the data plate.

20. ELECTRICAL FAST TRANSIENTS (EFT)

: It is referring to IEC61000-4-4 Class B Test Voltage: 2KV

21. GROUNDING

:Adapter AC inlet FG pin to DC plug FG 0.1 ohm max at 25A/60second

22. INPUT CONNECTOR

: AC Input connector shall be IEC320 C14 or C6 power connector.

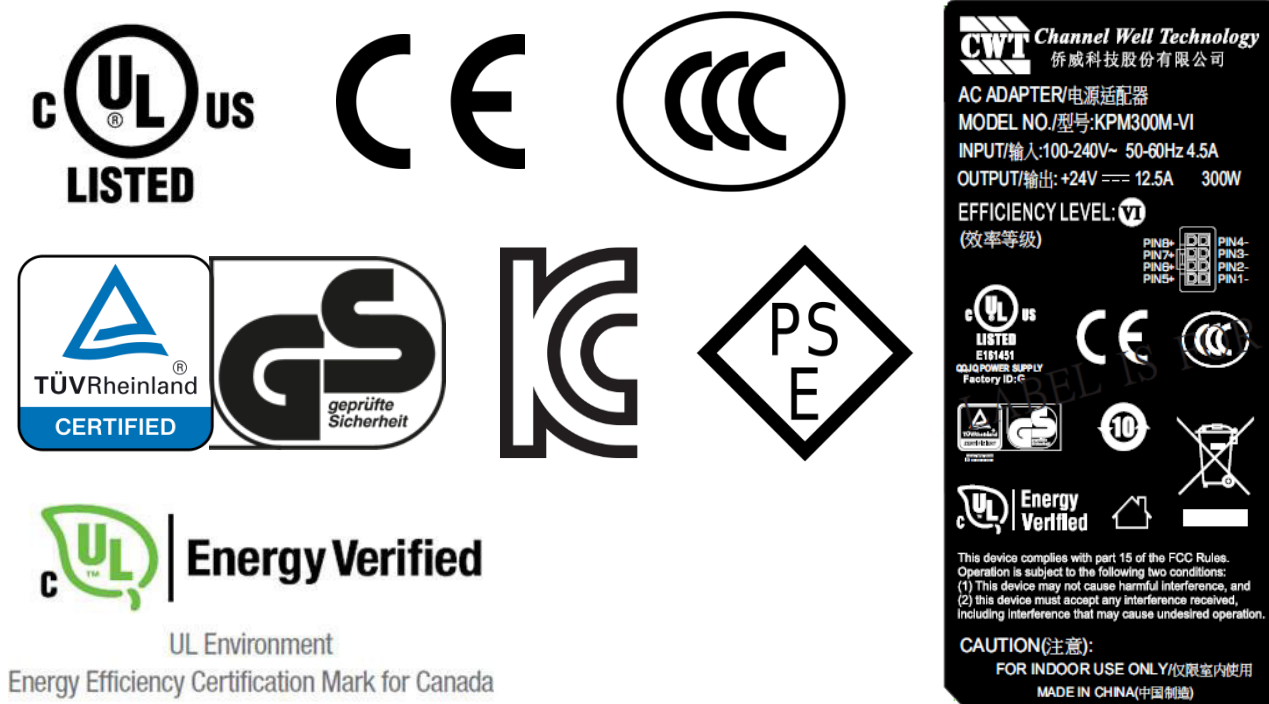
23. LOW POWER CONSUMPTION

Vin	Load	Power Consumption
240Vac/50Hz	0A	< 0.5 W
100Vac/60Hz		

Product Specification

2-4. INTERNATIONAL STANDARDS

2-4-1.Safety (Adapter)



2-4-2. Environment (Scaler Board /OSD Board)

- 1) RoHS, Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council

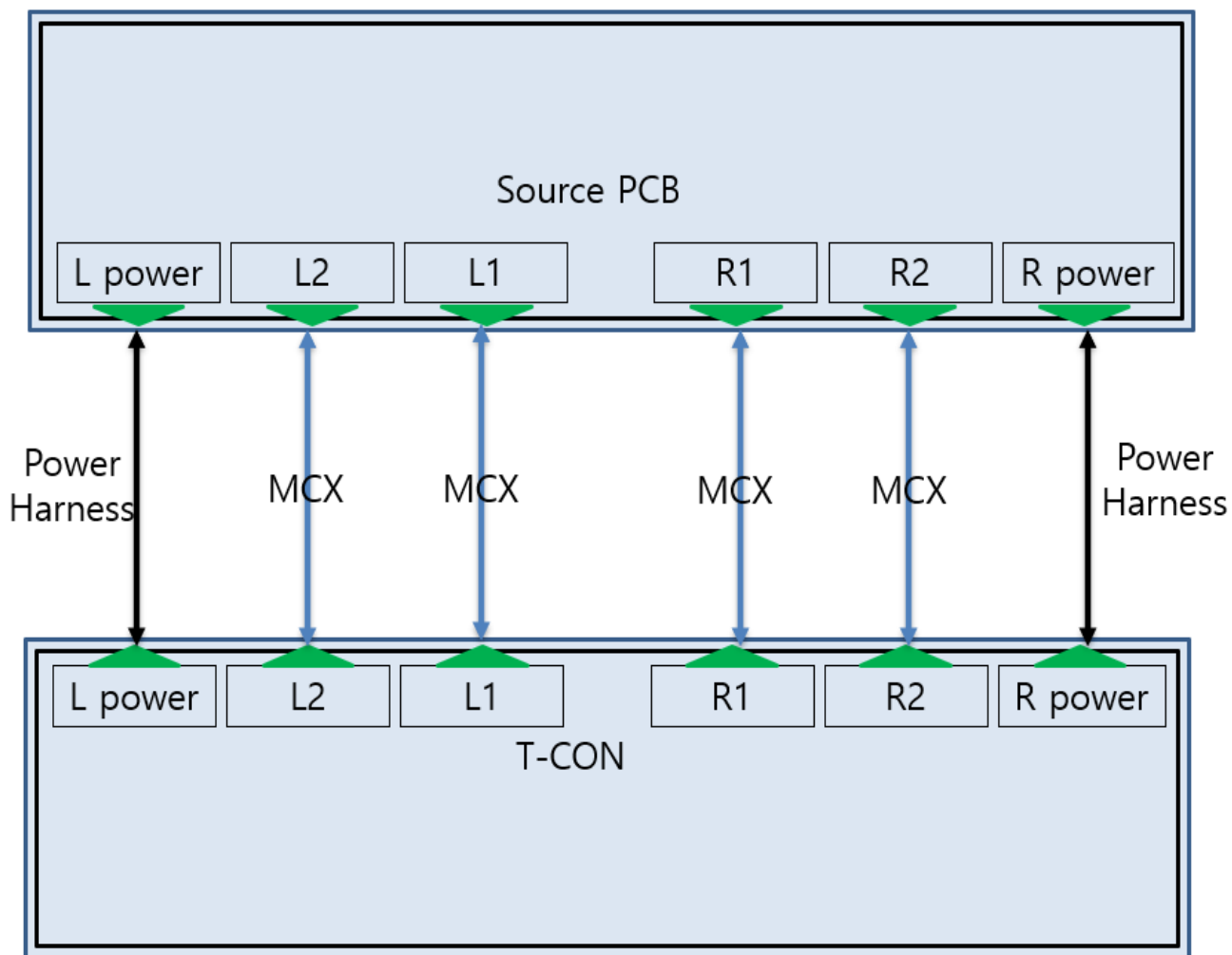
Notes

1. Safety standards of board components are defined to APPENDIX.

3. Cables

3-1. GENERAL DESCRIPTION

3-1-1. Cable Connection Diagram



Product Specification

3-1-2. MCX Cable spec.

MATERIAL	STANDARD	APPLICATION	REFERENCE
1. CONNECTOR 60P	1-1. PLUG : LCP/ Phosphor Bronze 1-2. SHELL : Phosphor Bronze 1-3. CONN : Phosphor Bronze	PLUG&SHELL &CONN&POOL BAR 60PIN	*Maker : I-PEX
2. WIRE	2-1. Inner conductor : Tinned copper alloy 2-2. Insulation : PFA 2-3. Outer conductor : Tinned copper 2-4. Shield : Cu metalized polyester 2-5. Jacket : polyeste	60strands	*Type : UL1354 40AW G *Maker : HITACHI
3. POOL BAR	Phosphor Bronze	2pcs	*Maker : I-PEX
4. POOL TAPE	PET	2points	*Maker : YIXING
5. Aceticacid TAPE	Aceticacid 2points *Maker : KEXU	2points	*Maker : KEXUN
6. STIFFENER	PC	4pcs	*Maker : YIXING
7 MESH	PET	OD : 8.0	*Maker : YIXING
8. LABEL	PAPER 2pc	2pcs	*Maker : YIXING

3-1-3. Power Harness cable spec.

PART NAME	SPECIFICATION	MANUFACTURER	App.
LEAD WIRE	UL 11150 26AWG	SHIN HWA / LTK WIRE	UL/CSA
HOUSING	12507HS-20L	YEON HO	UL/CSA
TERMINAL	12507TS	YEON HO	UL/CSA
EXPANDER TUBE		MINGXIN ELECTRONICS	UL/CSA
ACETATE TAPE		DUCKSUNG	UL/CSA

Notes

1. MCX Cable drawing is defined to APPENDIX.
2. Power Harness cable drawing is defined to APPENDIX.

Product Specification

4. Label and Packing

4-1. Information of Label

4-1-1. Module Label



ABC : Model

D : Year

E : Month

F : Revision

G~M : Serial No.

4-1-2. T-Con Board Label



ABC : Model

D : Year

E : Month

F : Revision

G~M : Serial No.

N : T-Con Board

4-1-3. Scaler Board Label



A : Manufacture Code

B,C : Year

D,E : Week

F : Publication Number



G~J : Serial No.

K,L : Model Code

4-1-4. Adapter Label



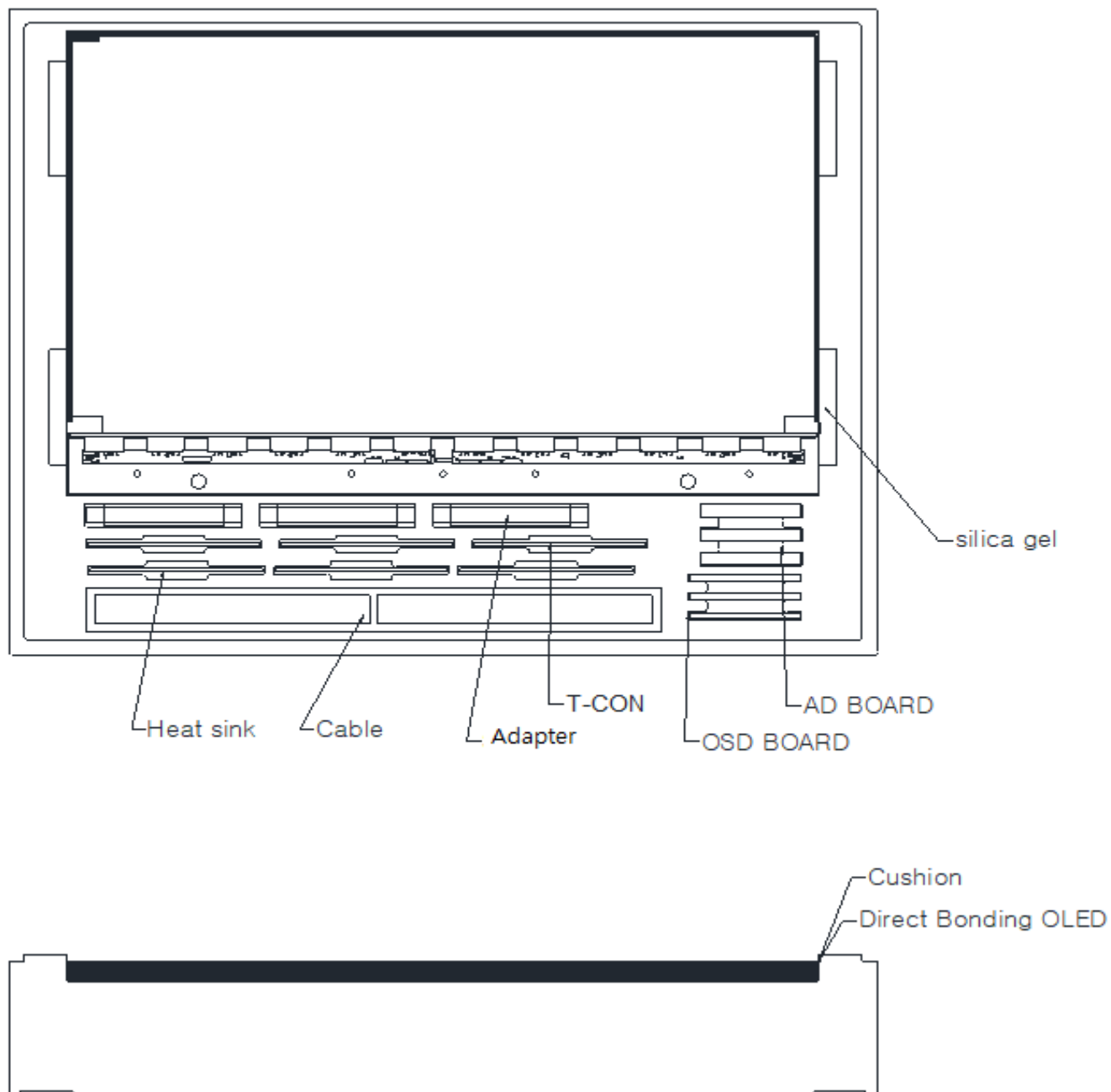
AB : Manufacture Code / C,D : Year/ E,F : Month / G,H,I,J,K,L,M,N,O : Serial No

4-2. Packing Form

(1) Package quantity in one Pallet : 12 pcs
 (3*pcs/Packing * 4packings = Total 12pcs/pallet)

(2) Pallet Size : 1420 mm(W) X 1120 mm(D) X 980 mm(H)

4-3. Packing Form



5. Precautions

5-1. Handling Precautions

- (1) The protection film is attached to the bezel with a small masking tape. When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion- blown equipment or in such a condition, etc.
- (2) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the bezel after the protection film is peeled off.
- (3) The Glass Encap surfaces(Rear of Board Assembly) should not be any residual moisture & Salinity. - Always handle the Board Assembly with gloves. - Chlorine or water from human sweat can accelerate the corrosion of Glass encapsulation - Glass Encap surface should be protected by the moisture, salinity
- (4) You can remove the glue easily. When the glue remains on the bezel surface or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane. Using a dry towel or fabric, remove water or solution like a cleaner from Board Assembly after finishing the install - Do not use the cleaner containing acid or chlorine ingredient
- (5) Be careful that the washing droplet is not flooded into the border gap on the panel edge, when cleaning the surface of OLED Module. It may cause abnormal operating or a malfunction in the OLED Module.
- (6) When the OLED Module is assembled , mechanical stress may not be put on the panel.
- (7) Be careful not to place any extra mechanical stress to the OLED module when designing the set .
- (8) Be cautious not to any extra strong force (mechanical shock, strong tapping, shooting etc.) to the OLED module. It may cause abnormal operating or a malfunction in the OLED Module.
- (9) If the panel is broken, glass should be kept away from the eyes and mouth. When it comes to contact to hands, legs, skin, or clothes, wash thoroughly with soap, and seek medical attention if necessary.
- (10) Surface temperature of the Component on PCB should be controlled under 100°C with TV Set status. If not, problems such as IC damage or decrease of lifetime could occur.

5-2. Appropriate Condition for Commercial Display

- To extend the lifetime and optimize a function of module, the below-mentioned operating conditions are required.

(1) Normal operating condition

- a. Temperature: $20 \pm 15^{\circ}\text{C}$
- b. Operating Ambient Humidity : $55 \pm 25\%$
- c. Only for indoor operation.
- d. Display pattern: dynamic pattern (Moving picture)
 - The sudden image on the screen can be displayed after the static image is shown in the long-term.
- e. TFT Compensation should need at least one time in a day.
- f. Lifetime in this spec. is guaranteed only when Display is used according to operating usages.

(2) Operating usages under abnormal condition

- a. Ambient condition
 - Well-ventilated place is recommended to set up Commercial system.

(3) Operating usages to reduce the risk of image sticking due to static image

- a. Suitable operating time: under 18 hours a day.
- b. Information display recommended to use with moving picture.
- c. Logo (image) and characteristics
 - Logo image recommended not to use.
 - If needed, recommend that its position needs to be periodically shifted.
 - Change colors themselves periodically.
- d. The below-mentioned conditions are not recommended .
 - Combination of Logo(or character) and background with largely different luminance.
 - Using a single moving picture. (Recommend to use several different moving pictures.)
 - The masked image with aspect ratio other than 16:9
 - The division of screen

Note1) Abnormal condition just means conditions except normal condition.

Note2) Black image or moving image is strongly recommended as a screen saver.

- (4) If the module will be used under severe conditions such as high temperature, high humidity, display patterns or operation time etc., it is strongly recommended to contact LG Display for the advice about usage and applications. Otherwise, its reliability and function may not be guaranteed.

5-3. Packing Precautions

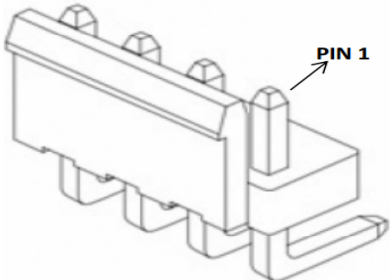
1. Do not load more than the specified quantity in 1 box. (3ea per box)
2. The number of stackable boxes is based on a maximum of 4 layers.(4ea per pallet)
3. The serial number of the packaged product and the serial number of the T-CON board must match.

Product Specification

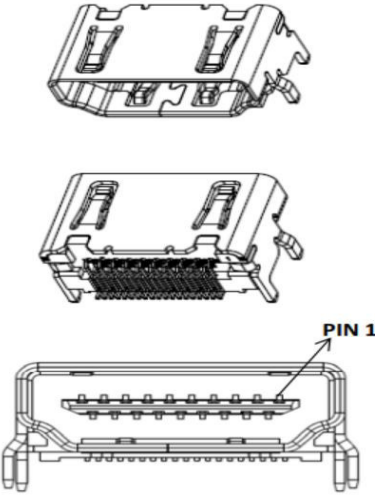
Appendix-I

1. Scaler board Connector Information

Power Connector (J15) : YAW396-08V (YEONHO) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	+24V	In	Board Input 24V
	2	+24V	In	Board Input 24V
	3	+24V	In	Board Input 24V
	4	+24V	In	Board Input 24V
	5	GND		Ground
	6	GND		Ground
	7	GND		Ground
	8	NC		No Connection

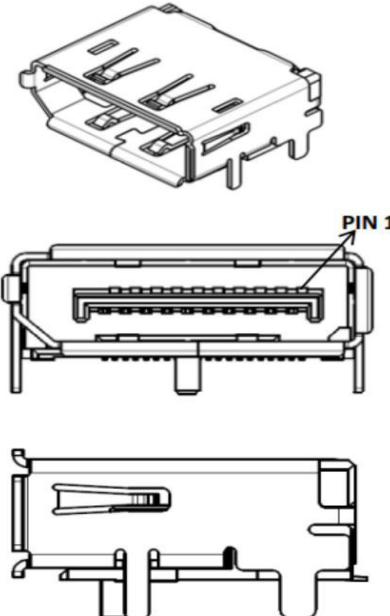
HDMI 2.0 Connector (J7) : 10029449-002 (Amphenol FCI) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	DATA2+	In	HDMI Data2 Positive
	2	DATA2 shield		Ground
	3	DATA2-	In	HDMI Data2 Negative
	4	DATA1+	In	HDMI Data1 Positive
	5	DATA1 shield		Ground
	6	DATA1-	In	HDMI Data1 Negative
	7	DATA0+	In	HDMI Data0 Positive
	8	DATA0 shield		Ground
	9	DATA0-	In	HDMI Data0 Negative
	10	CLK+	In	HDMI Data Positive Clock
	11	CLK shield	In	HDMI Cable Detect Signal
	12	CLK-	In	HDMI Data Negative Clock
	13	CEC		CEC
	14	NC		No Connection
	15	DDC SCL	In	I2C Serial Clock
	16	DDC SDA	I/O	I2C Serial Data
	17	CEC/DDC GND		Ground
	18	+5V	In	+5V Power
	19	HPD	Out	Hot Plug Detect Signal

Product Specification

Appendix-I-1

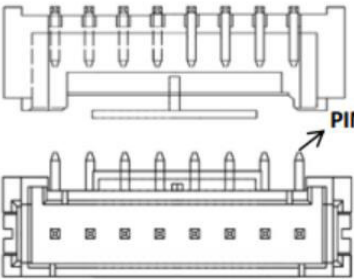
DP 1.2 Connector (J9) : 47272-0024 (MOLEX) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	DP_RX3-	In	DP Data3 Negative
	2	GND		Ground
	3	DP_RX3+	In	DP Data3 Positive
	4	DP_RX2-	In	DP Data2 Negative
	5	GND		Ground
	6	DP_RX2+	In	DP Data2 Positive
	7	DP_RX1-	In	DP Data1 Negative
	8	GND		Ground
	9	DP_RX1+	In	DP Data1 Positive
	10	DP_RX0-	In	DP Data0 Negative
	11	GND		Ground
	12	DP_RX0+	In	DP Data0 Positive
	13	GND		Ground
	14	GND		Ground
	15	DP_RXAUX+	In	DP Auxiliary Positive
	16	DP_CABLE_DET	In	DP Cable Detect Signal
	17	DP_RXAUX-	In	DP Auxiliary Negative
	18	DP_HPD	In	Hot Plug Detect Signal
	19	GND		Ground
	20	DPTX_3.3V	In	3.3V Power

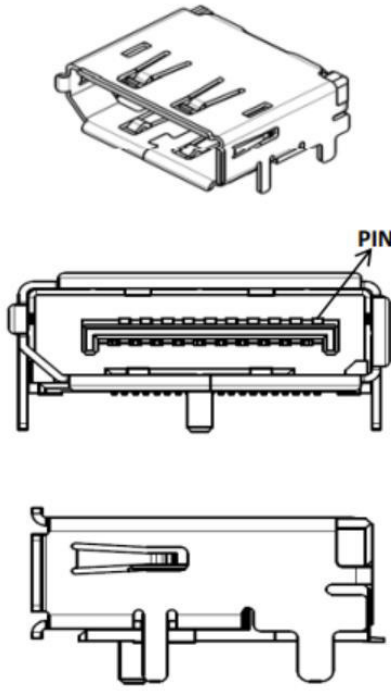
Product Specification

Appendix-I-2

OSD Connector (J4) : SMW200-H08G (YEONHO) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	3.3V	Out	3.3V Power
	2	+5V	Out	5V Stand_by
	3	IR_KEY	In	IR_RECEIVER
	4	KEY_ADC0	In	A-D0 Converter key
	5	KEY_ADC1	In	A-D1 Converter key
	6	LED_R	Out	LED drive for Red Color
	7	LED_G	Out	LED drive for Green Color
	8	GND		Ground

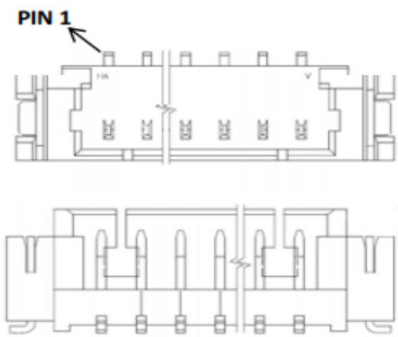
DP 1 2 Connector (J10) : 47272 0024 (MOLEX) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	DPTX_L0+	Out	DP Data Lane0 Positive
	2	GND		Ground
	3	DPTX_L0-	Out	DP Data Lane0 Negative
	4	DPTX_L1+	Out	DP Data Lane1 Positive
	5	GND		Ground
	6	DPTX_L1-	Out	DP Data Lane1 Negative
	7	DPTX_L2+	Out	DP Data Lane2 Positive
	8	GND		Ground
	9	DPTX_L2-	Out	DP Data Lane2 Negative
	10	DPTX_L3+	Out	DP Data Lane3 Positive
	11	GND		Ground
	12	DPTX_L3-	Out	DP Data Lane3 Negative
	13	GND		Ground
	14	GND		Ground
	15	DPTX_AUX+	Out	DP AUX Channel Positive
	16	GND		Ground
	17	DPTX_AUX-	Out	DP AUX Channel Negative
	18	DPTX_HPD	Out	Hot Plug Detect Signal
	19	GND		Ground
	20	DPTX_3.3V	Out	3.3V Power

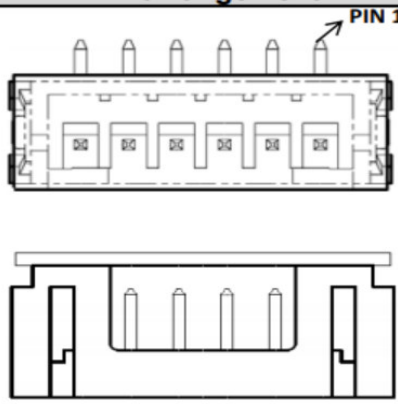
Product Specification

Appendix-I-3

INVERTER Connector (J3) : 12505WS-04 (YEONHO) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	BKL_EN	Out	Backlight Enable
	2	A-DIM	Out	Analog Dimming
	3	NC		No connection
	4	P-DIM	Out	PWM Dimming

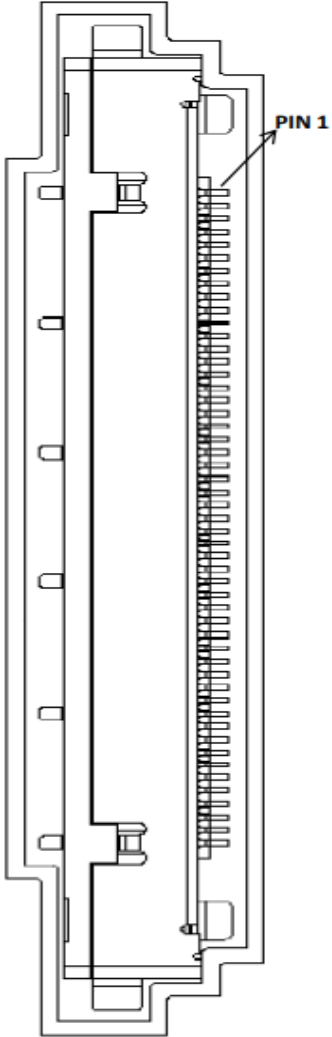
POWER Connector (J12) : 20022WS-14C (YEONHO) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	+V24	Out	Panel Power(24V)
	2	+V24	Out	Panel Power(24V)
	3	+V24	Out	Panel Power(24V)
	4	+V24	Out	Panel Power(24V)
	5	+V24	Out	Panel Power(24V)
	6	+V24	Out	Panel Power(24V)
	7	+V24	Out	Panel Power(24V)
	8	GND		Ground
	9	GND		Ground
	10	GND		Ground
	11	GND		Ground
	12	GND		Ground
	13	GND		Ground
	14	GND		Ground

Product Specification

Appendix-I-4

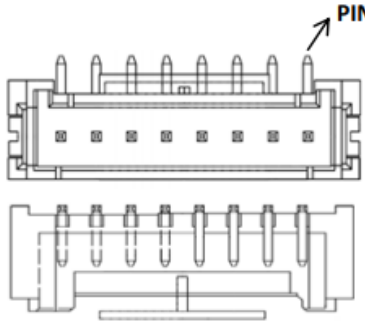
V by ONE Connector (J2) : 05030WR-H51B (YEONHO) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	GND		Ground
	2	TX7+	Out	Data lane7 Positive
	3	TX7-	Out	Data lane7 Negative
	4	GND		Ground
	5	TX6+	Out	Data lane6 Positive
	6	TX6-	Out	Data lane6 Negative
	7	GND		Ground
	8	TX5+	Out	Data lane5 Positive
	9	TX5-	Out	Data lane5 Negative
	10	GND		Ground
	11	TX4+	Out	Data lane4 Positive
	12	TX4-	Out	Data lane4 Negative
	13	GND		Ground
	14	TX3+	Out	Data lane3 Positive
	15	TX3-	Out	Data lane3 Negative
	16	GND		Ground
	17	TX2+	Out	Data lane2 Positive
	18	TX2-	Out	Data lane2 Negative
	19	GND		Ground
	20	TX1+	Out	Data lane1 Positive
	21	TX1-	Out	Data lane1 Negative
	22	GND		Ground
	23	TX0+	Out	Data lane0 Positive
	24	TX0-	Out	Data lane0 Negative
	25	GND		Ground
	26	LOCKN		Lock Detection
	27	HTPDN	In	Hot Plug Detection
	28	GND		Ground
	29	GND_AGP1		Auto Generation Pattern
	30	GND_AGP0		Auto Generation Pattern
	31	BIT_SEL		V-by-One Bit Selection
	32	EVDD_DET	In	EVDD Detection
	33	SCL	Out	I2C Serial Clock
	34	SDA	I/O	I2C Serial Data
	35	ERROR_DETEC		Power Error Detection
	36	DATA_FORMAT1	Out	Vx1 Input Format
	37	DATA_FORMAT0	Out	Vx1 Input Format
	38 ~ 42	GND		Ground
	43	HTPDN		Hot Plug Detection Signal
	44 ~ 46	GND		Ground
	47	NC		No Connection
	48 ~ 51	VCC		Panel Power

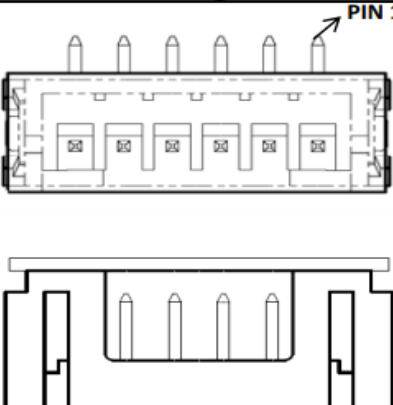
Product Specification

Appendix-I-5

RS232 Connector (J11): SMW200-H04G (YEONHO) or Equivalent

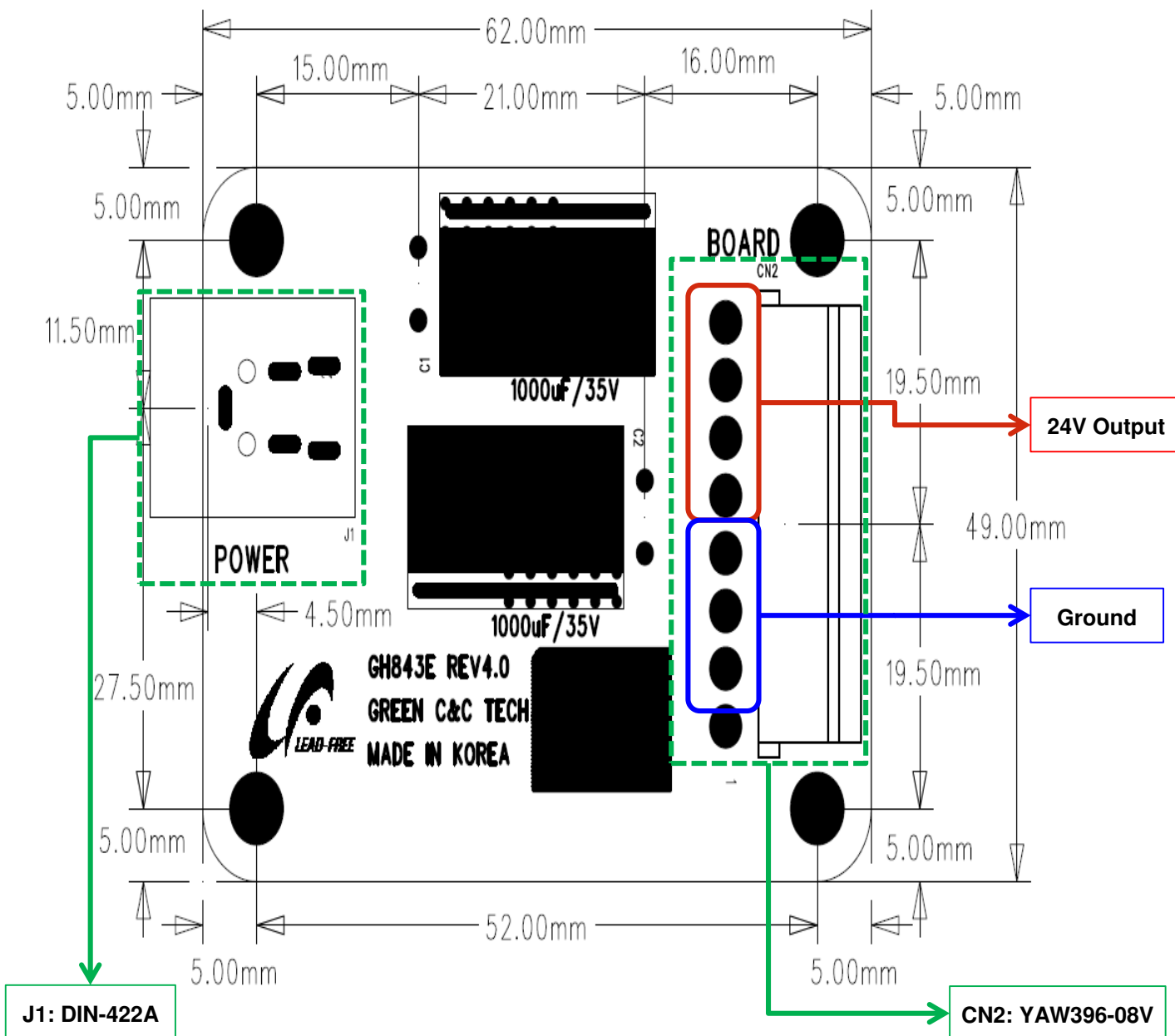
Pin arrangement	Pin no.	Function	I/O	Description
	1	GND		Ground
	2	TX		Transmitter data
	3	GND		Ground
	4	RX		Receive data

Power Connector (J8): 20022WS 12C (YEONHO) or Equivalent

Pin arrangement	Pin no.	Function	I/O	Description
	1	+V12	Out	Panel Power(12V)
	2	+V12	Out	Panel Power(12V)
	3	+V12	Out	Panel Power(12V)
	4	+V12	Out	Panel Power(12V)
	5	+V12	Out	Panel Power(12V)
	6	+V12	Out	Panel Power(12V)
	7	+V12	Out	Panel Power(12V)
	8	GND		Ground
	9	GND		Ground
	10	GND		Ground
	11	GND		Ground
	12	GND		Ground

Appendix-I-6

2. Adapter board and Sub Cap Board Connector Information



Product Specification

Appendix-I-7

1. OLED MODULE CONNECTOR(CN1) PIN CONFIGURATION

No	Symbol	Description	No	Symbol	Description
1	VDD	Power Supply +12.0V	27	GND	Ground
2	VDD	Power Supply +12.0V	28	Rx0N	V-by-One HS Data Lane0
3	VDD	Power Supply +12.0V	29	Rx0P	V-by-One HS Data Lane0
4	VDD	Power Supply +12.0V	30	GND	Ground
5	NC	No Connection	31	Rx1N	V-by-One HS Data Lane1
6	GND	Ground	32	Rx1P	V-by-One HS Data Lane1
7	GND	Ground	33	GND	Ground
8	GND	Ground	34	Rx2N	V-by-One HS Data Lane2
9	GND	Ground	35	Rx2P	V-by-One HS Data Lane2
10	Off RS	Off RS Done(H), Set←Module (note 3)	36	GND	Ground
11	AC_DET	AC_DET (H= On), Set → Module	37	Rx3N	V-by-One HS Data Lane3
12	Error Detection	H' = Error , 'L' = Normal (note 4)	38	Rx3P	V-by-One HS Data Lane3
13	I2C_SDA	I2C for Customer	39	GND	Ground
14	I2C_SCL		40	NC	No Connection
15	NC	Reserved	41	NC	No Connection
16	NC	Reserved	42	NC	No Connection
17	NC	For LGD Internal Use	43	NC	No Connection
18	I2C-SDA2	I2C for LGD internal use (Additional I2C for Customer)	44	NC	No Connection
19	I2C-SCL2		45	NC	No Connection
20	EVDD_DET	EVDD reset, Set ← Module (note6)	46	NC	No Connection
21	Bit Select	Bit Selection (10bit only)	47	NC	No Connection
22	NC	AGP2 (note 7)	48	NC	For LGD Internal Use
23	NC	AGP1 (note 7)	49	NC	For LGD Internal Use
24	GND	Ground	50	NC	On_RF_Done Set ← Module
25	HTPDN	Hot plug detect	51	NC	For LGD Internal Use
26	LOCKN	Lock detect	-	-	-

Appendix-I-8

1. OLED MODULE EVDD CONNECTOR(CN7) PIN CONFIGURATION

- EVDD Connector (CN7) : 20022WR-H14B2 (manufactured by Yeon Ho)
- Mating Connector : 2022HS-14B2(BK) (manufactured by Yeon Ho)
- VLC Connector (CN8, 9) : 12507WR-H05G (manufactured by Yeon Ho)

1. EVDD CONNECTOR(CN7) PIN CONFIGURATION

No	Symbol	Description
1	EVSS	OLED Panel Ground
2	EVSS	OLED Panel Ground
3	EVSS	OLED Panel Ground
4	EVSS	OLED Panel Ground
5	EVSS	OLED Panel Ground
6	EVSS	OLED Panel Ground
7	EVSS	OLED Panel Ground
8	EVDD	OLED Panel Power Supply +24V
9	EVDD	OLED Panel Power Supply +24V
10	EVDD	OLED Panel Power Supply +24V
11	EVDD	OLED Panel Power Supply +24V
12	EVDD	OLED Panel Power Supply +24V
13	EVDD	OLED Panel Power Supply +24V
14	EVDD	OLED Panel Power Supply +24V

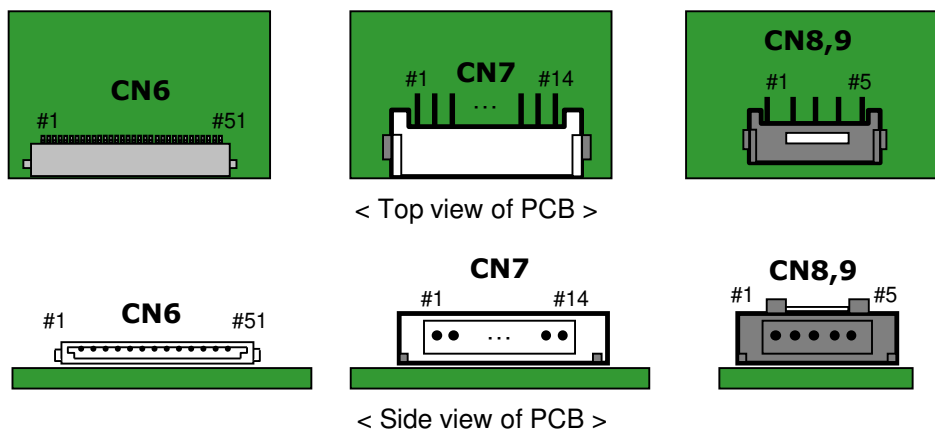
2. VLC Tx CONNECTOR(CN8) PIN CONFIGURATION

No	Symbol	Description
1	APLC_TXCLK_P	VLC LVDS Tx CLK +
2	APLC_TXCLK_N	VLC LVDS Tx CLK -
3	GND	Ground
4	APLC_TXDAT_P	VLC LVDS Tx Data +
5	APLC_TXDAT_N	VLC LVDS Tx Data -

3. VLC Rx CONNECTOR(CN9) PIN CONFIGURATION

No	Symbol	Description
1	APLC_RXDAT_N	VLC LVDS Rx Data -
2	APLC_RXDAT_P	VLC LVDS Rx Data +
3	GND	Ground
4	APLC_RXCLK_N	VLC LVDS Rx CLK -
5	APLC_RXCLK_P	VLC LVDS Rx CLK +

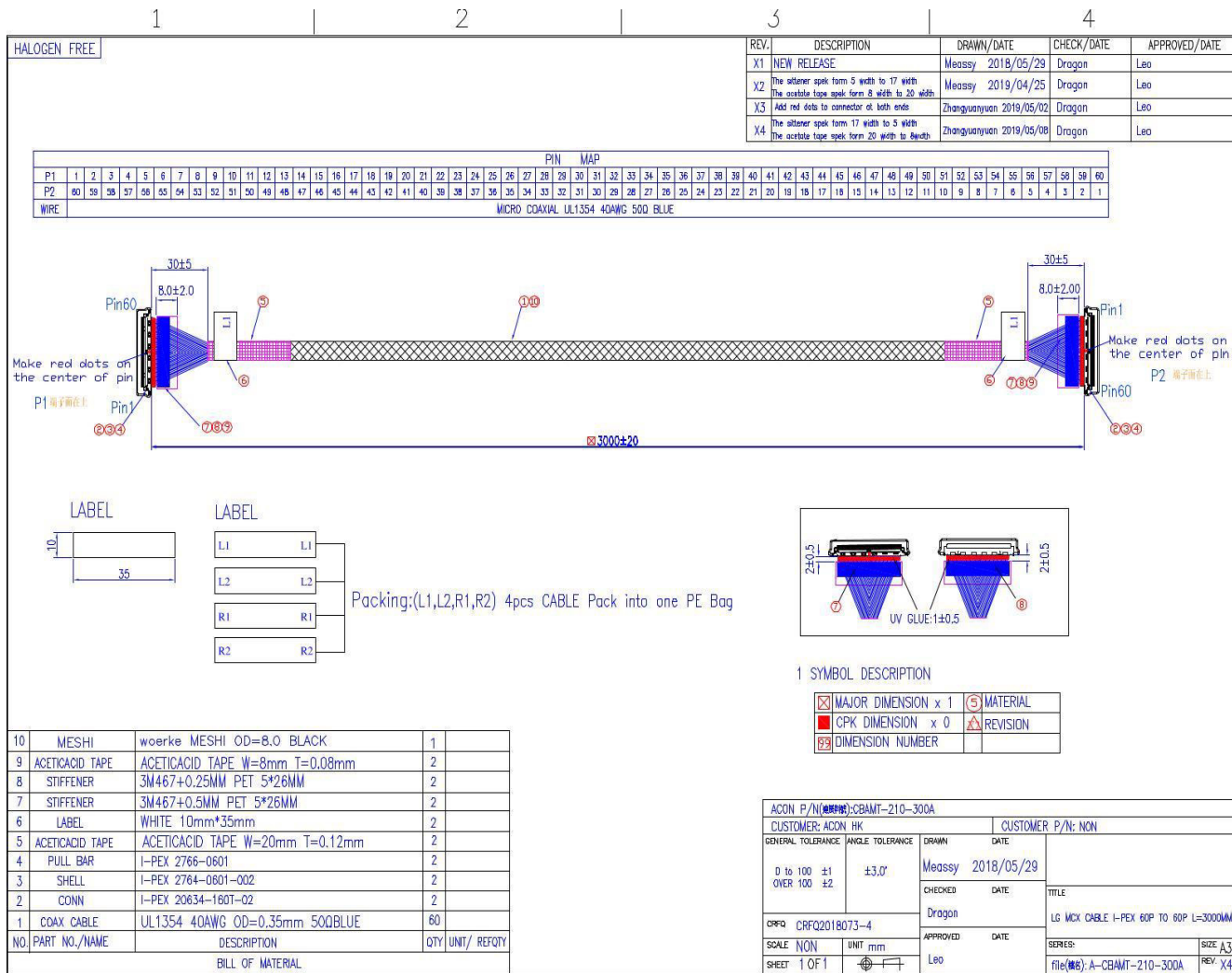
◆ Rear view of OLED Module



Product Specification

Appendix-II

1. MCX cable Drawing

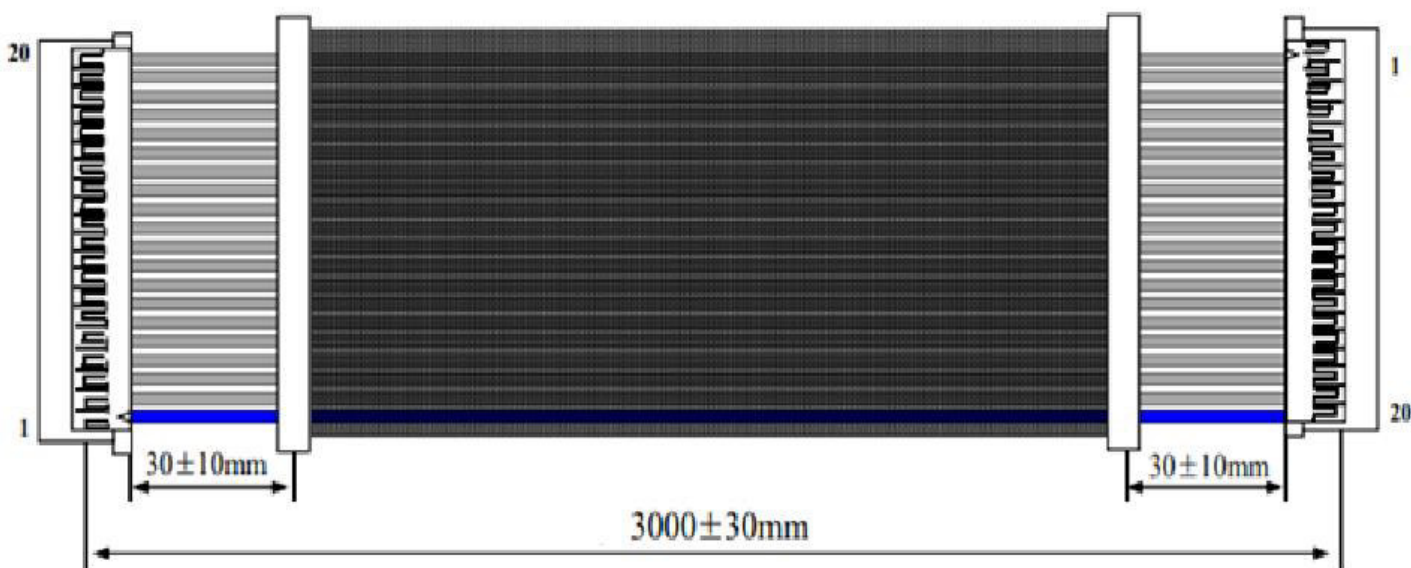


Appendix-II-1

2. Power Harness Single Drawing

SIDE A

SIDE B



Product Specification

Appendix-II-2

3. MCX cable Specification

1. Scope

This specification covers UL recognized Cl and Br free PFA insulated 50Ω micro-coaxial cable for internal wiring of electronic equipment, such as LCD panel

[UL Style 1354 / 80°C, 30V]

Use : Internal wiring of Electronic Equipment.

2. Construction

Item		Unit	Specified Value	
Code		-	SX/R	SX/L
Inner conductor	Material	-	Tinned copper alloy	
	AWG size	-	40	
	Stranding	No./mm	7/0.03	
	Dia.(approx.)	mm	0.09	
Insulation	Material	-	PFA	
	Thick.(nom.)	mm	0.08	
	Dia.(approx.)	mm	0.24	
	Color	-	Green	
Outer conductor	Type	-	Wrap(Left-hand lay)	Wrap(Right-hand lay)
	Material	-	Tinned copper	
	Thick.	-	0.032	
	Dia.(approx.)	mm	0.30	
Shield	Material	mm	Cu metalized polyester tape	
	Dia.(approx.)	-	0.32	
Jacket	Material	mm	Halogen free type polyester tape	
	Thick.(nom.)	-	0.015	
	Dia.(approx.)	mm	0.35	
	Color	mm	Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, Pink, White, Black	

Product Specification

Appendix-II-3

3-1. MCX cable Specification

3. Characteristics

Item	Unit	Specified Value
Rating temperature	°C	80
Rating voltage	V	30
Inner conductor resistance(at 20°C)	Ω/Km	Max. 5,000
Dielectric strength ¹⁾	-	Withstand A.C.500V for 1min
Insulation resistance ¹⁾ (at 20°C)	MΩ-Km	Min. 1,000
Characteristic impedance(at TDR)	Ω	Nom.50
Attenuation(at 10MHz)	dB/m	Nom.0.5
Capacitance(at1kHz)	pF/m	Nom.100
Flammability	-	VW-1
Allowable current(Ref.) ²⁾	A	0.4
Tensile strength(Ref.) ³⁾	N(Kgf)	Nom.9.8(1.0)

1) Applied between inner conductor and outer conductor

2) Single coaxial cable in the air, at ambient temperature 40°C, max. conductor temperature 80°C

3) Single coaxial cable, L=100mm, v=20mm/min

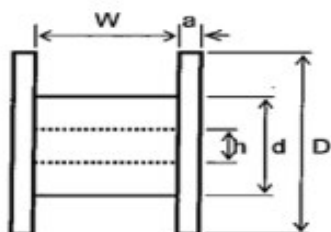
4. Packing

4.1. unit length

- (1) Standard length with no splices : 1000m/reel
 (2) Min. length with no splices :400m/reel

4.2. package

Plastic reel (code: P-3) into carton box



[Unit: mm]

Code	D	d	W	a	h
P-3	130	60	90	10	20

Fig.1 Dimension of plastic reel(P-3)

Appendix- II-4

3-2. MCX cable Specification

5. Marking

5.1 Marking on the cable

NO Marking on the cable

5.2 Marking on the tag

Each reel shall be tagged to show the following information with UL label.

- | | |
|-----------------------|---------------------------|
| (1) UL Style No. | (8) Rating temperature |
| (2) Conductor size | (9) Rating voltage |
| (3) No . of conductor | (10) Date of manufacture |
| (4) Color | (11) Insulation thickness |
| (5) Lot No | (12) Jacket thickness |
| (6) Length | (13) Name of manufacturer |
| (7) File No | (13) Use |

6.Parts name code

- (1) Left-hand lay wrap type:

UL1354-SX/R-CX-50_1 x 40 AWG(CBF)

- (2) Right-hand lay wrap type:

UL1354-SX/L-CX-50_1 x 40 AWG(CBF)

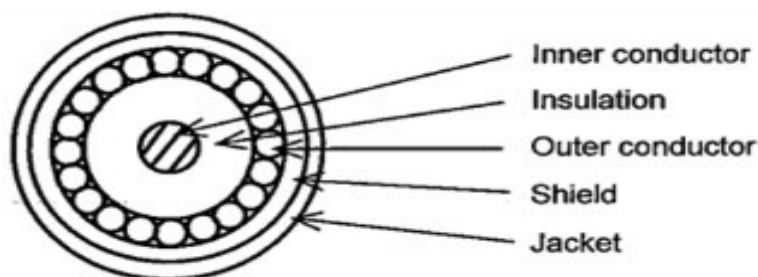


Fig.2 Cross-section of cable

Appendix-II-5

3-3. Power Harness Single Specification

1. SCOPE

This specification is applied to the appliance wiring material UL style 11150 for TPE insulated wire conforming to UL subject 758 and UL standard 1581.

2. CONSTRUCTION AND MATERLAL.

2-1. Conductor.

Consists of anneal copper stranded of which each stranded are Tin-coated and shall be in accordance with Table. 1

2-2. Insulation,

May use Class 43 compound insulated conductor the average thickness or diameter in according to the Table 1.

2-3. Rating.

	UL / cUL
Temp.	105°C
Volt.	300V

2-4. File No. : E97577

3. MARKING

The making shall be printed on the surface of the jacket as following;

B97577  AWM 11150 VW-1 105°C 300V XX AWG

 AWM I A/B 105°C 300V FT1/FT2 -HF- SHIN HWA

4. Physical properties;

Insulation	Tensile strength	Elongation
Unaged	Minimum 0.562 kgf/mm ²	Minimum 200%
After aging of 136°C X168H. In Air-oven	Minimum 75% of original	Minimum 75% of original

5. TEST

The test must be carried out in accordance with UL subject 758 and UL standard 1581.

Appendix-II-6

- Detailed examination test
- Heat shock test
- Cold bend test
- Deformation test
- Flammable test VW-1.

6. Packing.

The packing length shall be coiled a bundle and would by vinyl Tape for not damage during transport and stop.

Table 1. Construction for UL Style 11150.

Conductor	AWG size	24	26	28	30
	Material	Tin-coated annealed Copper	Tin-coated annealed Copper	Tin-coated annealed Copper	Tin-coated annealed Copper
	Construction	11 x 0.160TA	7 x 0.160TA	7 x 0.127TA	7 x 0.102TA
	Conductor dia.(mm)	0.60	0.48	0.38	0.31
Insulation	Material	TPE	TPE	TPE	TPE
	Nor. Thickness(mm)	0.25	0.25	0.25	0.25
	Nor. Overall dia.	1.10±0.03	1.00±0.03	0.90±0.03	0.80±0.03
	Allowable current(A)	4.6	3.4	2.6	2.0
	Color	-	-	-	-
Conductor MAX. resistance DC 20°C(Ω/km)		93.25	148.94	237.38	376.96
Insulation MIN. resistance DC 15.6°C(M Ω/km)		15	15	15	15
Dielectric with standing Voltage (VAC/km)		2000	2000	2000	2000
Allowable current(Reference)		4.6A	4.6A	4.6A	4.6A

Appendix-III

■ Design guide for Heat dissipation for SOURCE D-IC

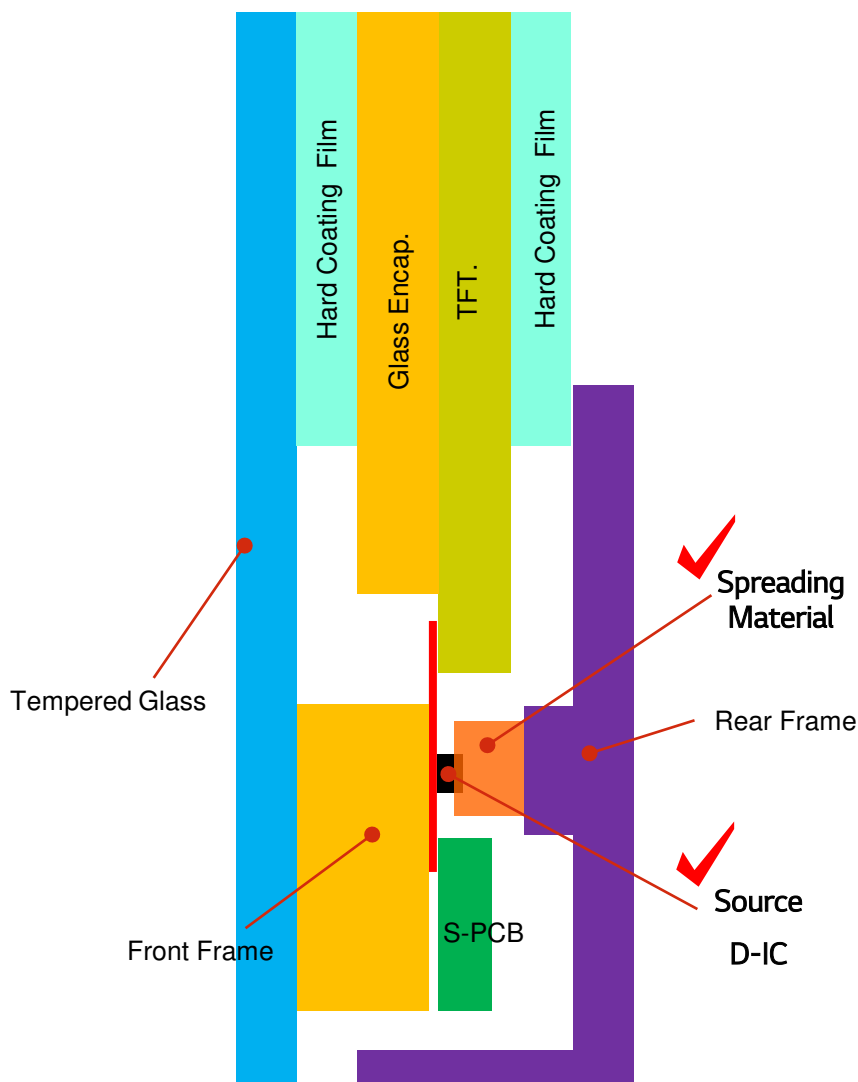
1. Potential issue

The heat transfer efficiency down if D-IC is not contacted.

2. Recommendation

In case of using Heat spreading sheet

- 1) Contact the SOURCE D-IC with embossment on Heat spreading sheet for heat dissipation.
- 2) Not be overlapped much to prevent COF damage.
- 3) The contact area to exceed the area of the SOURCE D-IC.



Appendix-III-1

■ Design guide for Electrostatic Discharging design for Board Assembly

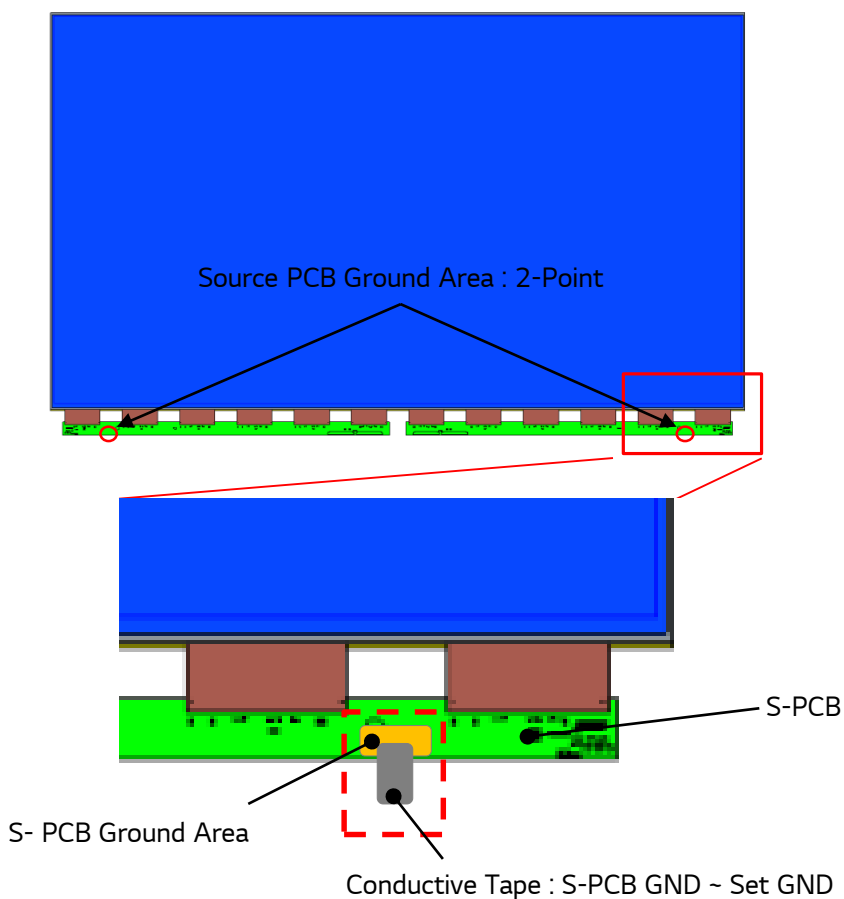
1. Purpose

To design the contact structure for electrostatic discharging on Board Assembly

2. Recommendation

Electrostatic discharging design for Board Assembly (Ground Path)

- 1) To design the contact structure for electrostatic discharging on Board Assembly
- 2) Attach Conductive Tape or Equivalent between S-PCB Ground and Set Ground



Product Specification

Appendix-IV

1. OCA Property

Properties	Typical value	Remarks
Thickness (mm)	0.5 : standard (0.3 ~ 1.0 is available)	Bonding of CG to LCD module with metal frame (0.8-1.5 mmt) is also available.
Transmittance (%)	>98	@589nm, not including surface reflection nor absorption of substrate.
Haze (%)	<1.0	same as above

	Properties	Measurement condition	Unit	Typical data
Optical Characteristics	Color (x,y)	CIE color space	-	Colorless (0.31,0.32)
	Transmittance	380-780nm	%	> 98
		at luminous transmittance (Corrected for reflection losses)		
	Haze	JIS K 7136	%	< 1.0
	Refractive Index	JIS K 7142 / 589nm		1.47
Mechanical Properties	Peeling Test 180°	JIS 6854-2 / glass	N/25mm	> 0.5
	Shear Strength	AGC method (Fig.1)	kPa	45
	Density	Archimedean method	g/cc	1
Impurities	Cd	IEC62321-5: 2013	ppm	< 2
	Pb	IEC62321-5: 2013	ppm	< 2
	Hg	IEC62321-4: 2013	ppm	< 2
	Cr(VI)	IEC62321: 2008 ANNEX C	ppm	< 2
	PBBs	IEC62321-6: 2015	ppm	< 5
	PBDEs	IEC62321-6: 2015	ppm	< 5
	Cl	BS EN14582(2007)/Combustion	ppm	< 50
	Br	BS EN14582(2007)/Combustion	ppm	< 50

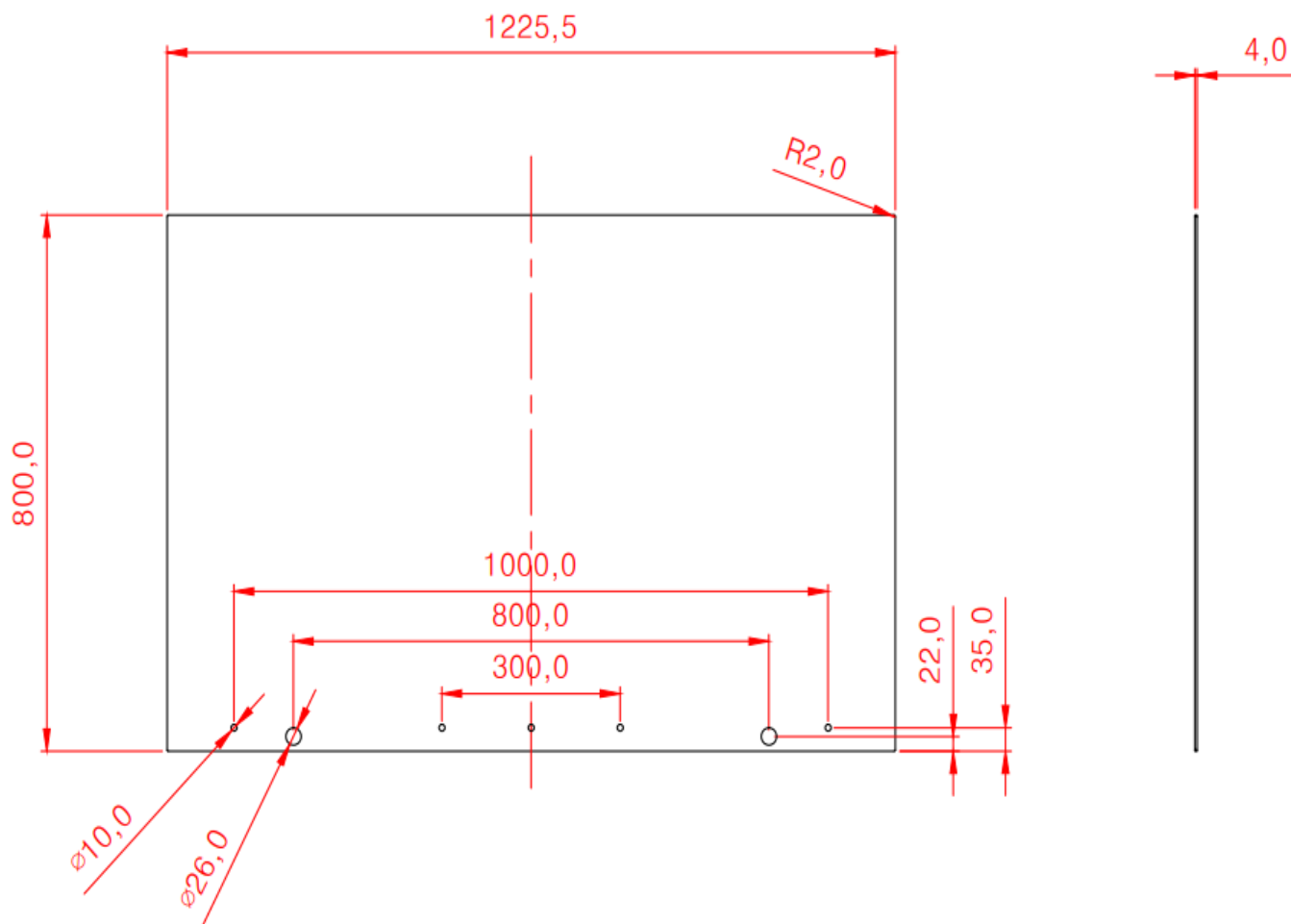
Product Specification

Appendix-IV-1

Testing	Condition		Thickness of adhesive
			layer
			0.5 mm (t)
Storage	95°C	with no load	500 hrs
at high temp.		with load (LCD×5)	500 hrs
Storage at low temp.	-40°C	with no load	500 hrs
Storage	60°C	with no load	500 hrs
at high temp. with high humidity	+ 90% R.H.	with load (LCD×5)	500 hrs
Heat cycle	-40	with no load	250 cycles
	~ 95°C		
Light stability	Carbon	with no load	500 hrs
	(225 W/m ²)		
	Xe		500 hrs
	(150 W/m ²)		

Appendix- V

1. Glass Drawing

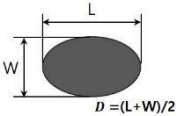
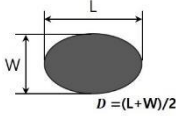
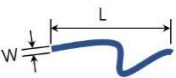
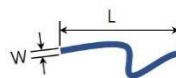

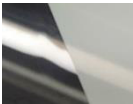
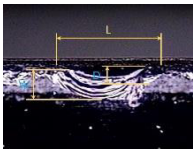
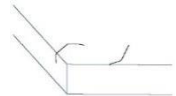


Unspecified Glass tolerance : $\pm 1.0\text{mm}$.

Product Specification

Appendix-VI

1. Glass Appearance Specifications

Defects		Inspection standard	Judgment criteria
Viscosity defect (foreign substances, bubbles)		$D \leq 0.7\text{mm}$	Acceptable
		$0.7\text{mm} < D \leq 1.0\text{mm}$	< 10, acceptable (fault gap, > 10 mm)
		$1.0\text{mm} < D$	Not allowed
stamped		$D \leq 0.7\text{mm}$	Acceptable
		$0.7\text{mm} < D \leq 1.0\text{mm}$	< 3, acceptable (fault gap, > 50 mm)
		$1.0\text{mm} < D$	Not allowed
linear defect (Threads, linear stains, etc.)		$W \leq 0.2\text{mm}, L \leq 25\text{mm}$	Acceptable
		$0.2\text{mm} < W \leq 0.3\text{mm}$ $25\text{mm} < L \leq 50\text{mm}$	< 10, acceptable (fault gap, > 10 mm)
		$0.3\text{mm} < W, 50\text{mm} < L$	Not allowed
Scratch		$W \leq 0.2\text{mm}, L \leq 25\text{mm}$	Acceptable
		$0.2\text{mm} < W \leq 0.3\text{mm}$ $25\text{mm} < L \leq 50\text{mm}$	< 10, acceptable (fault gap, > 10 mm)
		$0.3\text{mm} < W, 50\text{mm} < L$	Not allowed
Bubble		$0.5\text{mm} < D$	Not allowed
Dent		Not to be found	
Chip		$L \leq 0.5\text{mm}$ $W \leq 0.5\text{mm}$ $D \leq t/2\text{mm}$	Acceptable
Crack			Not allowed
Smudge		Ignore what is erased	Acceptable

Appendix-VII

1. Glass Reliability

1. Ball Drop Test

- Test method: Fix the outside of the specimen glass to the mold frame and freely drop the steel ball into the center of the glass to check for damage.
- Judgment criteria: No damage at 500g, 100cm;

2. Surface Hardness

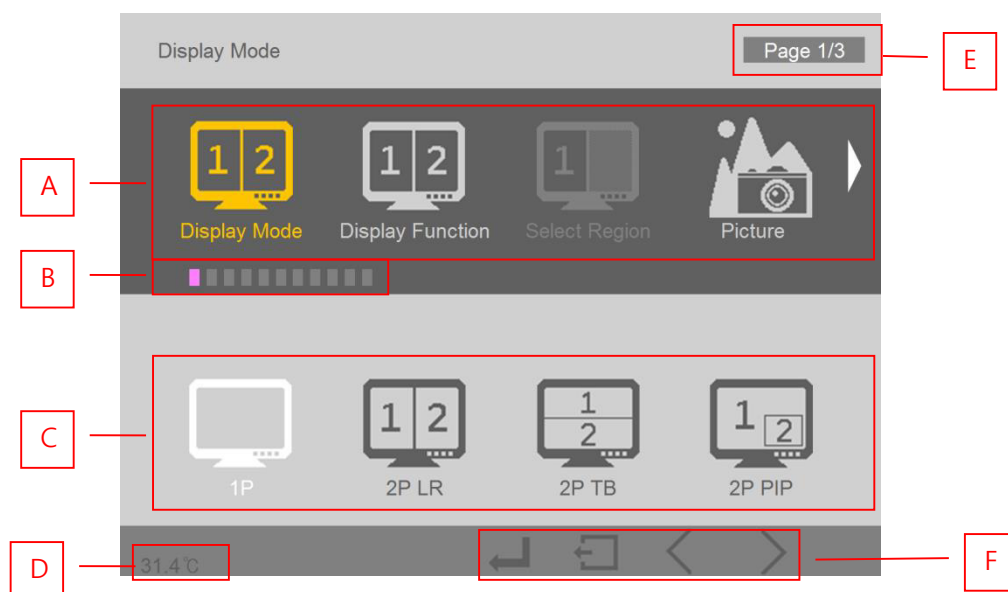
- Test method: Mitsubishi pencil, load 500g, 5 measurements
- Judgment criteria : Glass : Min 6H

Appendix-VIII

1. OSD function Manual

1. Menu configuration

You can easily adjust each function through the menu that appears on the screen of this product.
The menu structure of this product is expressed as follows.



A : Displays the upper menu.

B : Displays the number and position of the upper menu.

C : Displays the submenu corresponding to the upper menu.

D : Displays the temperature data of OLED S-B/D.

E : Displays the number of top menu pages.

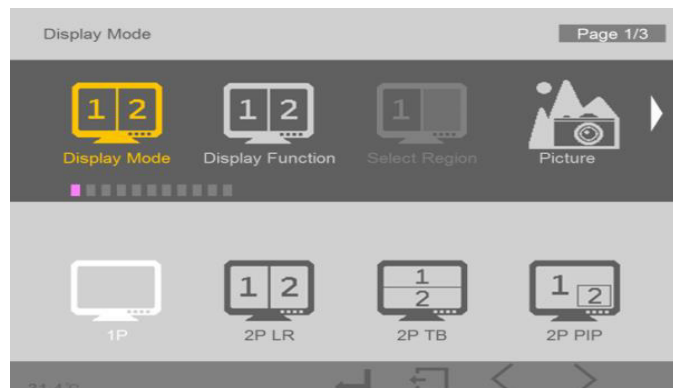
F : Expresses button press. ([ENTER], [EXIT], [UP], [DOWN] buttons)

Appendix-VIII-1

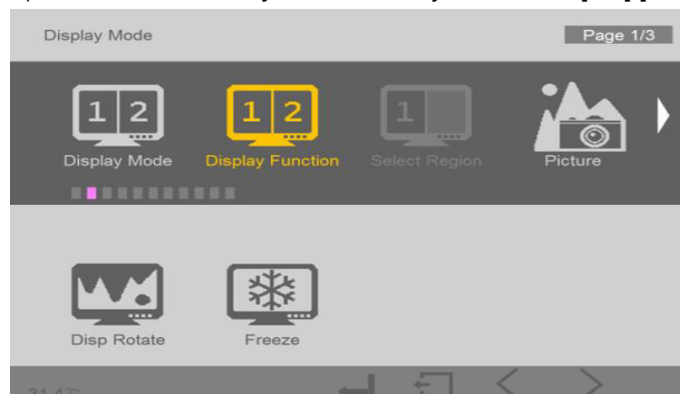
2. Menu adjustment sequence

Adjust this menu in the following order.

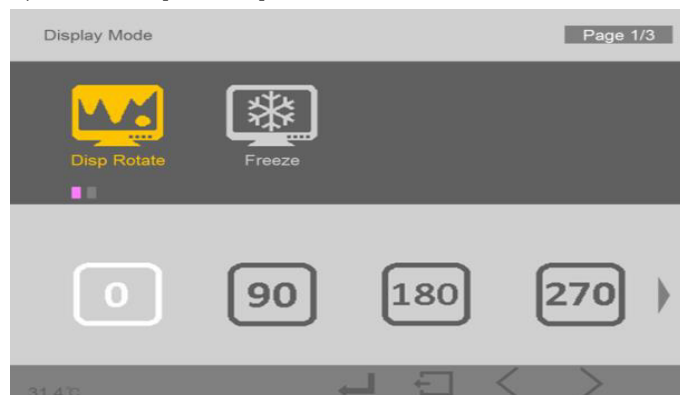
1) Press the MENU button to display the main menu on the screen.



2) Move to the menu you want to adjust with the [UP]/[DOWN] buttons. (If you move, a submenu is displayed.)

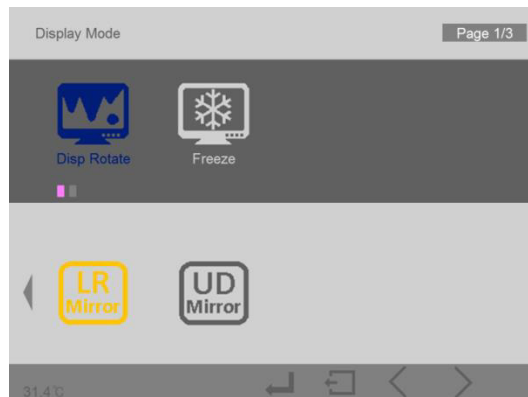
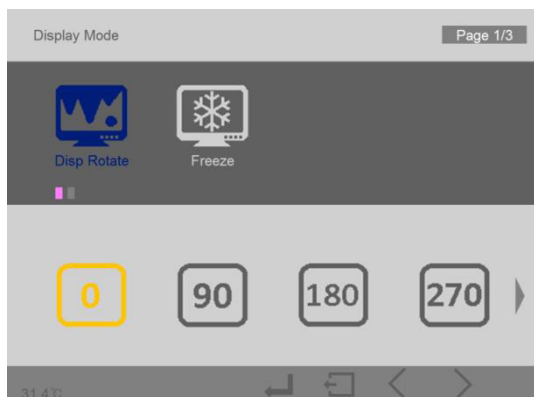


3) Press the [ENTER] button on the desired main item to move to the sub-item.



Appendix-VIII-2

4) Press the [ENTER] button to move to a lower level and use the [UP]/[DOWN] buttons to select the item you want to adjust.

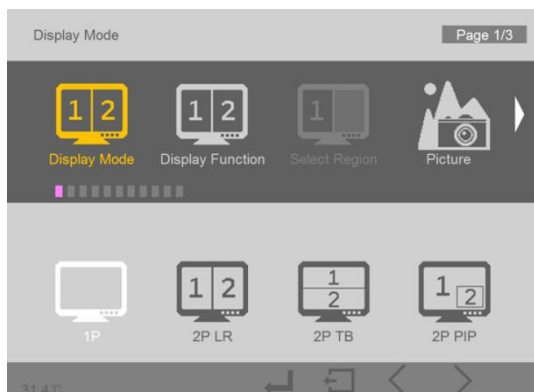


5) Press the [ENTER] button in the sub-item to apply and save, and press the [MENU] button to cancel the setting.

6) Press the [MENU] button to return to the previous menu. If there is no previous menu, the main menu disappears.

3. Menu

1) Display Mode



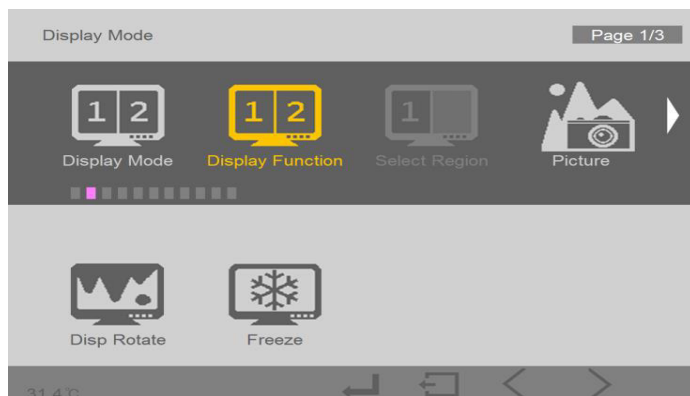
Main Menu	Sub Menu	Control
Display Mode	1P	Display 1 input on 1 screen
	2P LR	2Input divided left and right to display
	2P TB	2Input divided up and down to display
	2P PIP	Display 2 inputs on one full screen and another small screen

Product Specification

Appendix-VIII-3

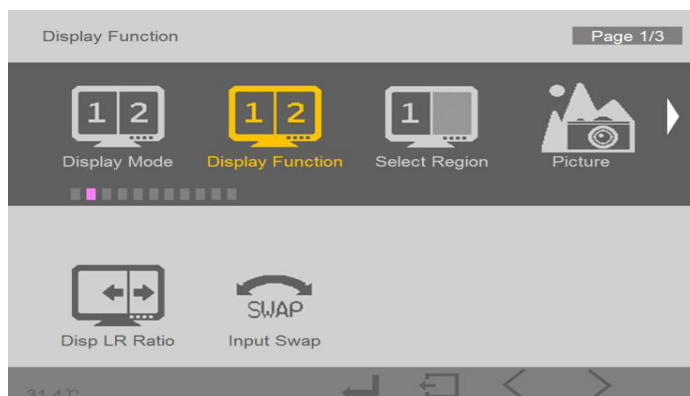
2) Display Function

1) Display mode [1P]



Main Menu	Sub Menu	Control
Display Function [1P]	Display Rotate	[0°], [90°], [180°], [270°], [L/R Mirror], [U/D Mirror]
		Rotate and flip the screen. (Applicable only for 1P)
	Freeze	[On], [Off]
		Temporary screen freeze. (Applicable only for 1P)

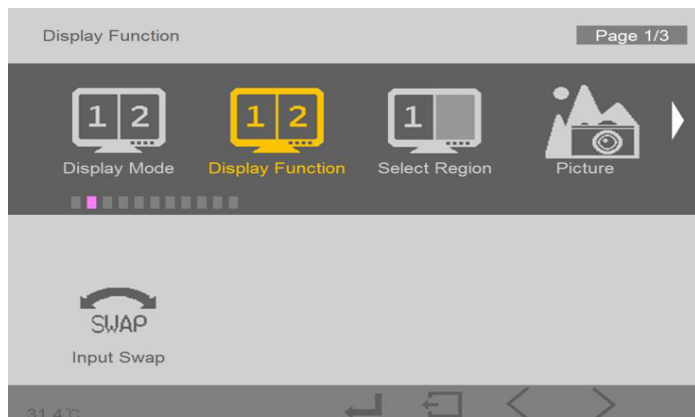
2) Display mode [2P LR]



Main Menu	Sub Menu	Control
Display Function [2P LR]	Disp LR Ratio	0 ~ 4
		Adjust the main/sub screen split ratio.
	Input Swap	[ENTER]
		Swap left/right screen input.

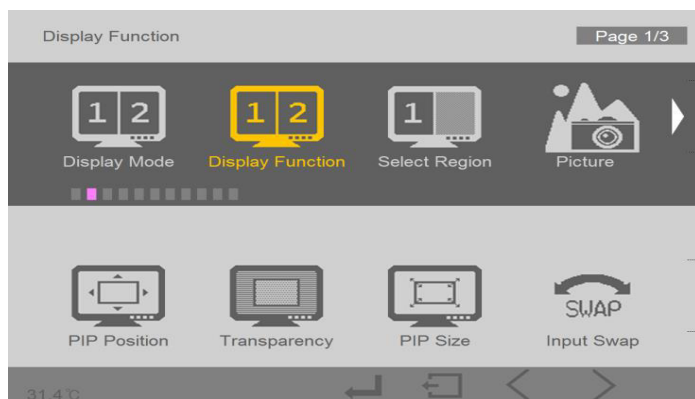
Appendix-VIII-4

3) Display mode [2P TB]



Main Menu	Sub Menu	Control
Display Function [2P TB]	Input Swap	[ENTER]
		Swap up/down screen input.

4) Display mode [2P PIP]

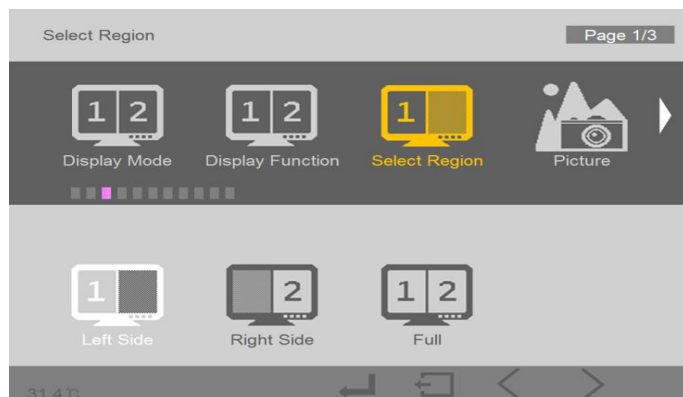


Main Menu	Sub Menu	Control
Display Function [2P PIP]	PIP Position	[LT], [RT], [LB], [RB], [CENTER], [USER]
		Change the position of the sub-screen.
	Transparency	0 ~ 10
		Adjust the transparency of the sub-picture.
	PIP Size	0 ~ 10
		Adjust the size of the sub-picture.
	Input Swap	[ENTER]
		Swap the input of the main screen sub screen.

Appendix-VIII-5

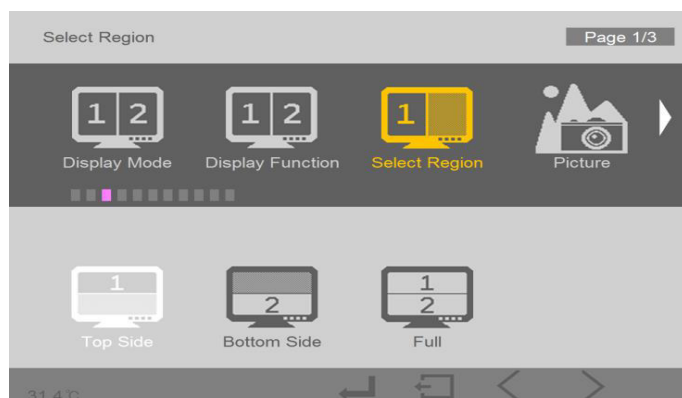
3) Select Region

1) Display mode [2P LR]



Main Menu	Sub Menu	Control
Select Region [2P LR]	Left Side	Applies only to the left screen of the Color menu function
	Right Side	Applies only to the right screen of the Color menu function
	Full	Color menu function applied to all screens

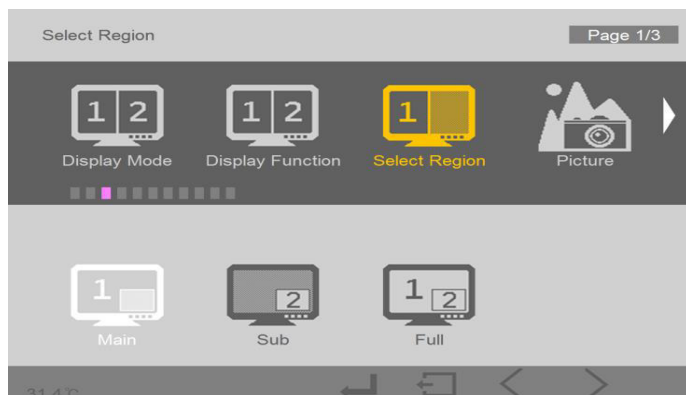
2) Display mode [2P TB]



Main Menu	Sub Menu	Control
Select Region [2P TB]	Left Side	Applies only to the upper screen of the Color menu function
	Right Side	Applies only to the below screen of the Color menu function
	Full	Color menu function applied to all screens

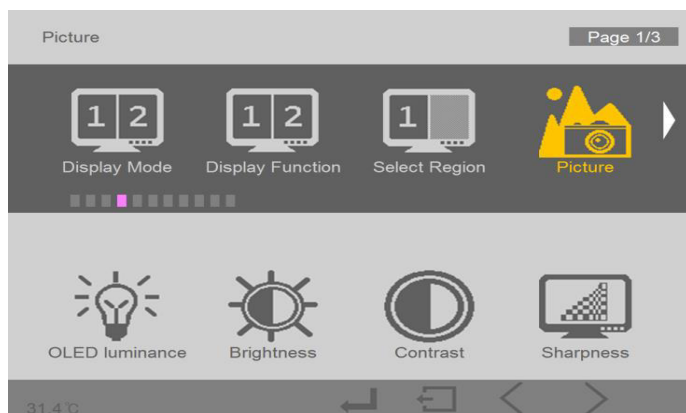
Appendix-VIII-6

3) Display mode [2P PIP]



Main Menu	Sub Menu	Control
Select Region [2P PIP]	Left Side	Color menu function Applied only to the main screen
	Right Side	Color menu function Applied only to the sub screen
	Full	Color menu function applied to all screens

4) Picture

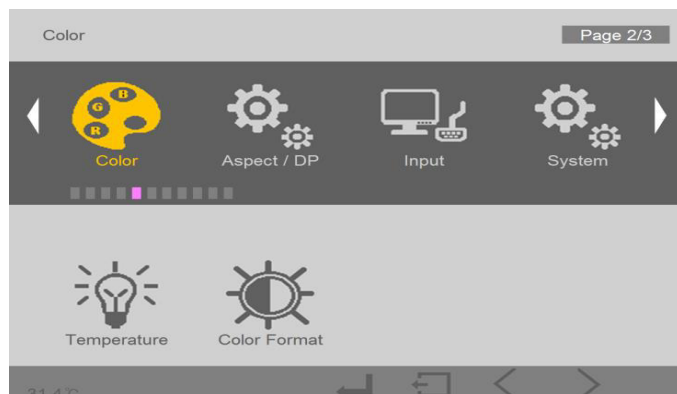


Main Menu	Sub Menu	Control
Picture	OLED luminance	0 ~ 100
		Adjust the OLED Global Gain value.
	Bright	0 ~ 100
		Adjust the brightness (Offset) of the screen.
	Contrast	0 ~ 100
		Adjust the contrast (Gain) of the screen.
	Sharpness	0 ~ 4
		Adjusts the screen's peaking.

Product Specification

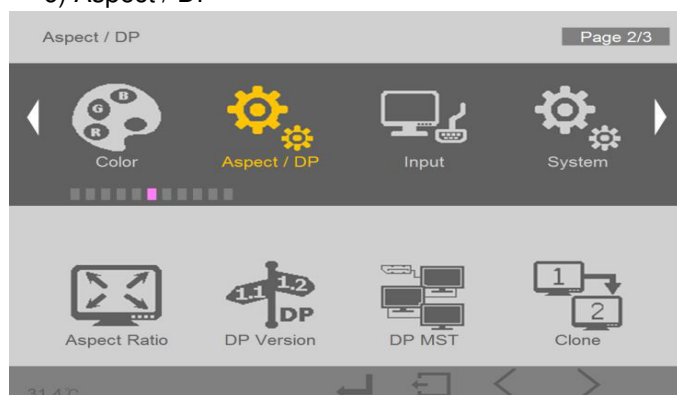
Appendix-VIII-7

5) Color



Main Menu	Sub Menu	Control
Color	Temperature	[User], [9600], [7500], [6500], [5500], [sRGB]
		Set the color temperature of the screen.
	Color Format	[RGB], [YUV]
		Manually set Color Format.

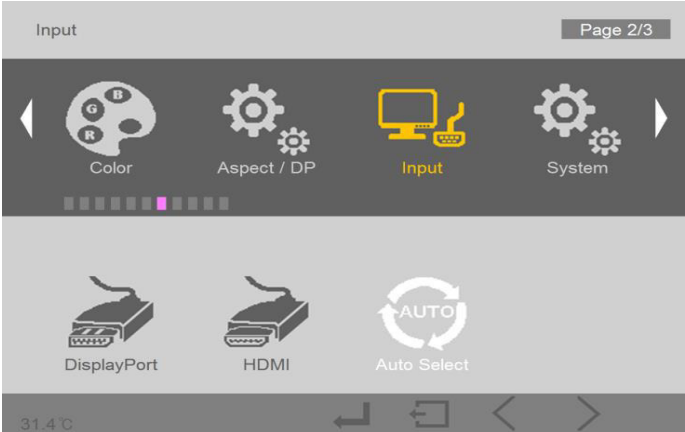
6) Aspect / DP



Main Menu	Sub Menu	Control
Aspect / DP	Aspect Ratio	[Full], [16:9], [4:3], [1:1]
		Set the output aspect ratio.
	DP Version	[1.1], [1.2], [1.3],
		Set the DisplayPort version.
	*DP MST	[Off], [On]
		Set the Multi-stream Transport (MST) function
	**Clone	[Off], [On]
		The selected input is output to the DP Out terminal. (DP, HDMI).

Appendix-VIII-8

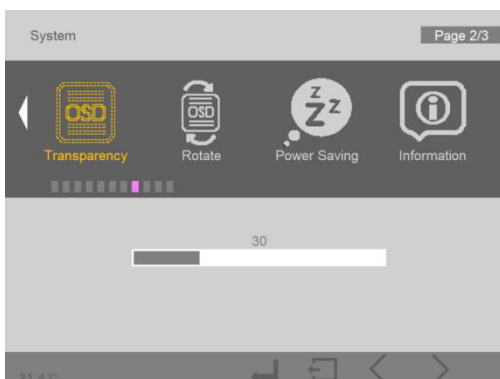
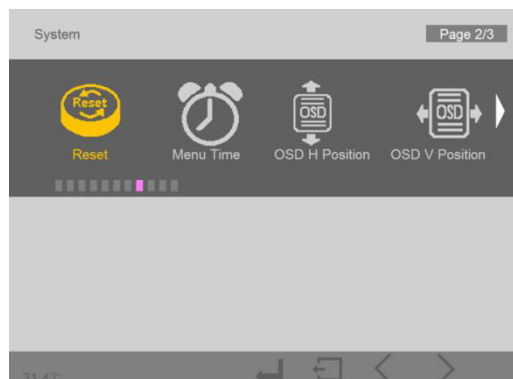
7) Input



Main Menu	Sub Menu	Control
Input	DisplayPort	Set to DisplayPort input.
	HDMI	Set to HDMI input.
	Auto Select	Set to automatic input scan.

Appendix-VIII-9

8) System

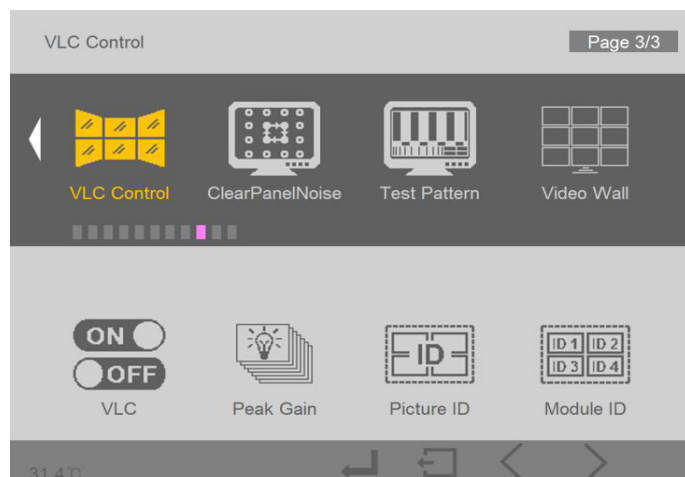


Main Menu	Sub Menu	Control
System	*Reset	Reset settings to factory values.
	Menu Time	0 ~ 60
		Sets the OSD menu activation time.
	OSD H Position	0 ~ 100
		Set the left/right position of the OSD menu.
	OSD V Position	0 ~ 100
		Set up/down position of OSD menu.
	Transparency	0 ~ 100
		Sets the transparency of the OSD menu.
	Rotate	[0°], [90°], [180°], [270°]
		Rotate the OSD menu screen.
	Information	Displays information about the current input port and input signal.
	Power Saving	Enable/Disable Power Saving Mode.
		ON/OFF

*When Reset is executed, [Off-RS], [JB] accumulated time is not initialized.

Appendix-VIII-10

9) VLC control



Main Menu	Sub Menu	Control
VLC/TPC Ctrl	VLC	[Off], [On]
		Set the VLC features provided by OLED.
	Peak Gain	[Not Used], [2 frame], [4 frame] , [8 frame]
		Set the Average Frame Number.
	Picture ID	1 ~ 1023
		Set the Group ID.
	Module ID	1 ~ 1000
		Set the Module ID.
	TPC ON/OFF	Turn the TPC function on or off.

* VLC: Video wall Luminance Compensation

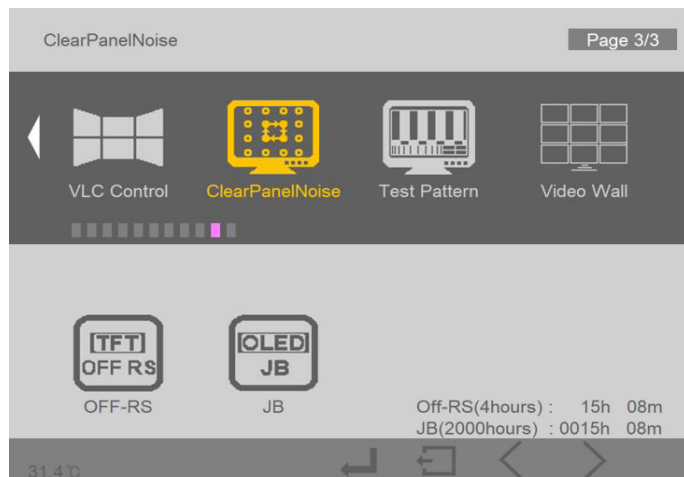
- Connect the VLC Tx terminal and VLC Rx terminal of T-Con B/D between the OLED modules.

* TPC: Lowers the luminance value after a certain period of time in the dynamic screen

- In case of intermittent luminance value difference when configuring the peak gain value of some panels
Please set the TPC function to OFF.

Appendix-VIII-11

10) Clear Panel Noise



Main Menu	Sub Menu	Control
Clear Panel Noise	OFF-RS	[Start Now], [Start once TV is off], [Start once TV is on]
		Perform OFF-RS
	JB	[Start Now], [Start once TV is off], [Start once TV is on]
	Off-RS(4hours) : JB(2000hours) :	Displays the accumulated time up to the present after executing OFF-RS or JB operation.

* Off-RS(4hours) : 15h 08m

* JB(2000hours) : 0015h 08m

- The above means that 15h 08m has elapsed after performing OFF-RS or JB operation.
- When the accumulated 4 hours for OFF-RS and 2000 hours for JB have elapsed, the function is executed according to the settings of [Start once TV is off] and [Start once TV is on].

* [Start Now] : Press the [ENTER] button and it will work immediately. It also works as a shortcut for the OSD button..

** [Start once TV is off] : Executes [OFF-RS]/[JB] function when Set Power Off.

-OFF-RS operates within the operating temperature range of 0~45°C.

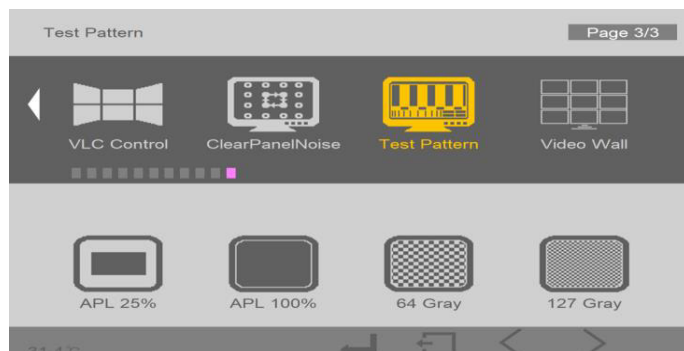
-In case of JB, it operates within the operating temperature range of 0~40°C.

***[Start once TV is on] : Executes [OFF-RS]/[JB] function when Set Power On.

Product Specification

Appendix-VIII-12

11) Test Pattern

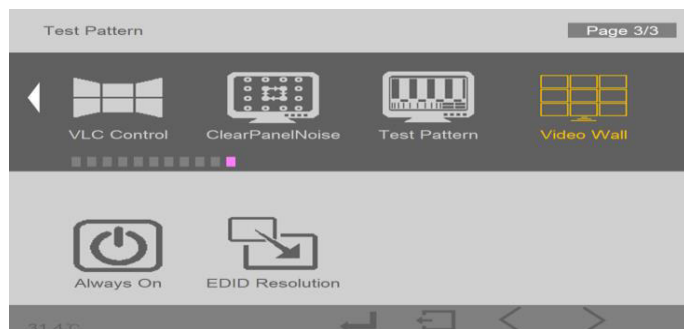


Main Menu	Sub Menu	Control
Test Pattern	APL 25%	Displays the APL 25% screen.
	APL 100%	Displays the APL 100% screen.
	64 Gray	Displays the Gray 64Level screen.
	127 Gray	Displays the Gray 127Level screen.

*Run the required test pattern for the OLED panel.

- For luminance measurement and shipping test

12-1) Video Wall (Standard)



Main Menu	Sub Menu	Control
Video Wall	Always On	[Off], [On]
		Always on when mains power (AC) is turned on.
	EDID Resolution	[1080p / 60Hz], [1080p / 120Hz]
		Select EDID resolution for DisplayPort, HDMI

* Always On

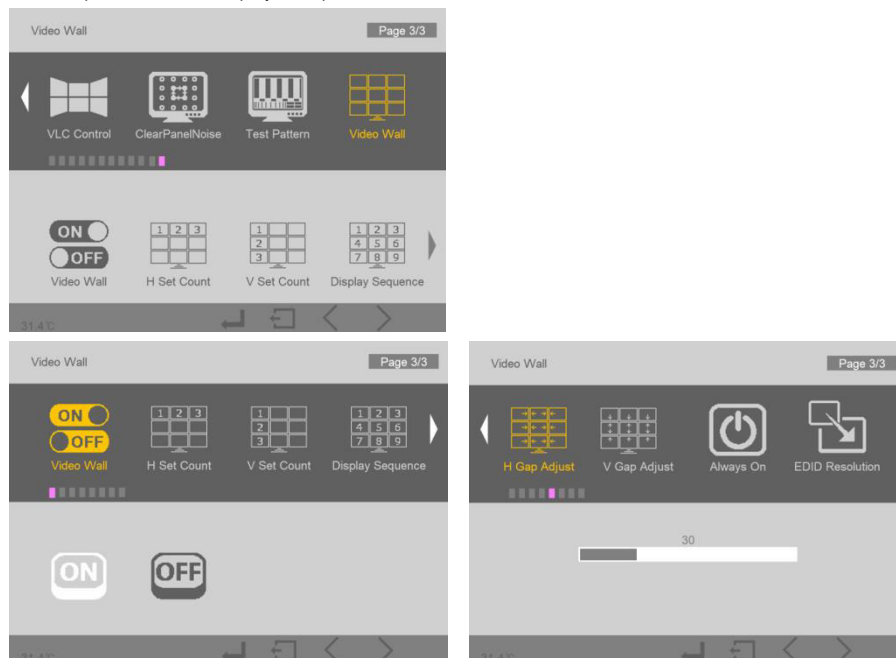
* This function always turns on when the main power (AC power) is turned on even when the remote control or OSD key is powered off.

* EDID Resolution

- The above selects the DisplayPort HDMI output to be output in FHD (1920x1080p / 60Hz) or (1920x1080p / 120Hz)

Appendix-VIII-13

12-2) Video Wall (Option)



Main Menu	Sub Menu	Control
Video Wall	Video Wall	[Off], [On]
		Select the Video Wall feature
	H Set Count	1 ~ 4
		Select the number of horizontal sets of the video wall.
	V Set Count	1 ~ 4
		Select the number of vertical sets of Video Wall.
	Display Sequence	1 ~ 4
		Select the number of horizontal sets of the video wall.
	H Gap Adjust	0 ~ 50
		Set compensating for the horizontal gap between sets.
	V Gap Adjust	0 ~ 50
		Set compensating the vertical gap between sets.
	Always On	[Off], [On]
		Always on when mains power (AC) is turned on
	EDID Resolution	[1080p / 60Hz], [1080p / 120Hz]
		Select EDID resolution for DisplayPort, HDMI

Appendix-VIII-14

* Always On

- This function always turns on when the main power (AC power) is turned on even when the remote control or OSD key is powered off.

* EDID Resolution

- The above selects the DisplayPort/HDMI output to be output in FHD(1920x1080p/60Hz)or(1920x1080p/120Hz).

* Video Wall can be configured up to 2x2.

- The setting method is as follows when configuring a total of 4 sets of 2x2 as shown below.



1) H Set Count

Set the number of sets to configure horizontally to 4. (Set up to 4 sets)



Appendix-VIII-15

2) V Set Count (set up to 4 sets)

- Set the number of sets to configure vertically to 4.



3) Display Sequence

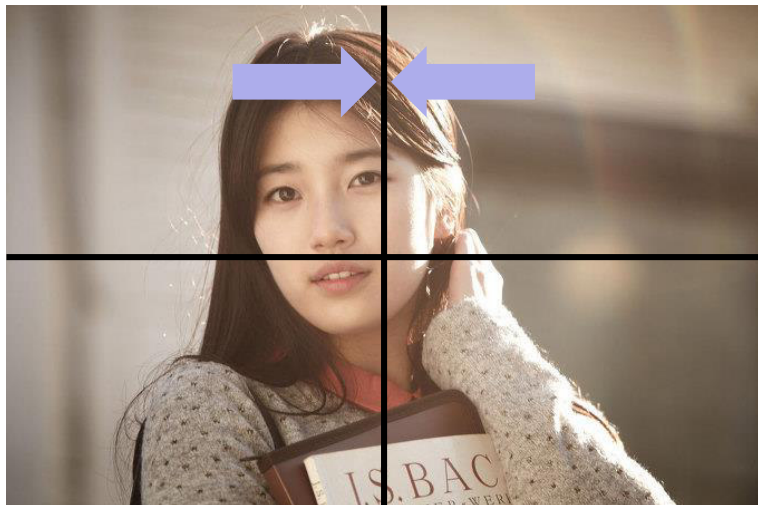
- Set the position to be displayed for the set. (Set up to 4 positions for a maximum of 2x2)



Appendix-VIII-16

4) H Gap Adjust

- Depending on the bezel thickness of the panel, there is a distortion of the image due to the gap between sets. Therefore, the distortion can be reduced by compensating for the H Gap as much as the bezel thickness.



5) V Gap Adjust

- By compensating for V Gap as much as the bezel thickness, distortion can be reduced.



Product Specification

Appendix-IX

1. Safety standards

Board Type	NAME	TYPE	MANUFACTURER	UL File No. / Standard
Scaler Board	PCB	SK	SEO KANG TECH CO., LTD.	E150774
	Connector(J3)	12505WS-04(P)	YEON HO ELECTRONICS CO LTD	E108706
	Connector(J4)	SMW200-H08G	YEON HO ELECTRONICS CO LTD	E108706
	Connector(J8)	20022WS-12C	YEON HO ELECTRONICS CO LTD	E108706
	Connector(J9,J10)	47272-0001	Molex L L C	E29179
	Connector(J11)	SMW200-H04G	YEON HO ELECTRONICS CO LTD	E108706
	Connector(J12)	20022WS-14C	YEON HO ELECTRONICS CO LTD	E108706
	Connector(J15)	YAW396-08V	YEON HO ELECTRONICS CO LTD	E108706
OSD Board	PCB	SK	SEO KANG TECH CO., LTD	E150774
	Connector(CN1)	12507WR-08L	YEON HO ELECTRONICS CO LTD	E108706
CAP BOARD	PCB	SK	SEO KANG TECH CO., LTD.	E150774
	Connector(CN2)	YAW396-08V	YEON HO ELECTRONICS CO LTD	E108706
Adapter	Power supply	KPM300M-VI	CHANNEL WELL TECHNOLOGY	E161451
MCX Cable	Wiring Harnesses	ZPFW2	HAENG SUNG CO LTD	E215947
Power Cable	Wiring Harnesses	ZPFW2	HAENG SUNG CO LTD	E215947
	Connector	12507HS-20L	YEON HO ELECTRONICS CO LTD	E108706
	Harness	-	Shin Hwa Cable Co Ltd	E506293



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