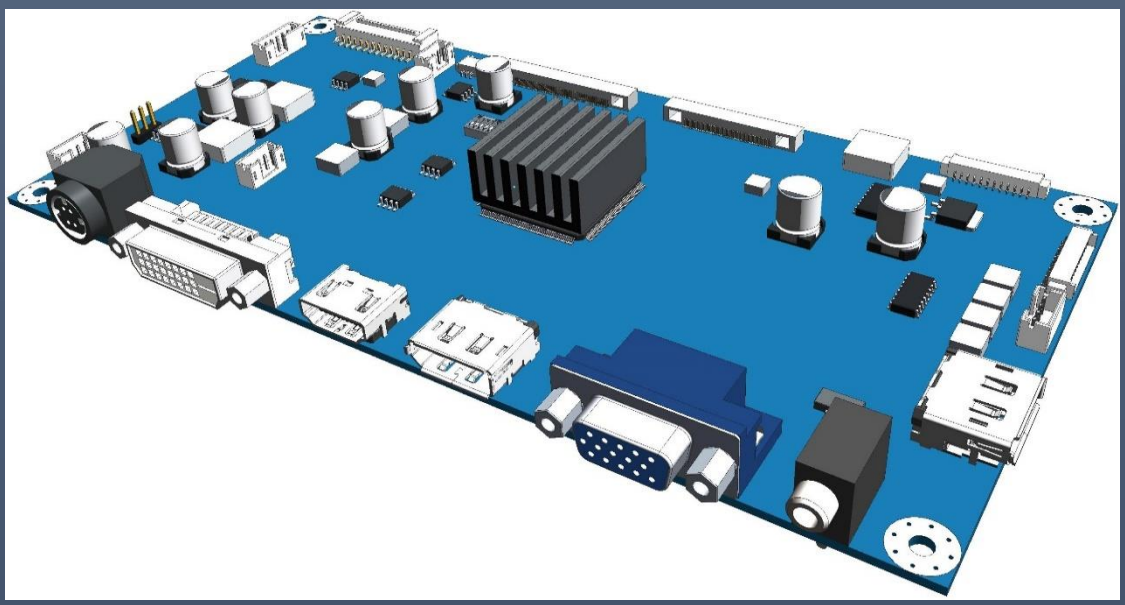
2021

Data Sheet



Model Name : Galaxy5

Part No. : GLX5 - xxx....xxx

(xxx...xxx : Target LCD Part No.)

Contents

Revision History

PCB Version	Rev. date	Revision Details
0.0	Nov 2019	Engineering Sample
1.0	Aug 2020	Addition of wide dimming menu and relevant firmware setting

1. General Description

- **QHD(2560x1600, 2560x1440) resolution display format.**
- Up scaling from VGA, SVGA, XGA, SXGA,, UXGA to QHD VESA Standard Mode.
- Provides up to 30-bit color and 4 Channel LVDS Interface
- HDMI connector/**HDMI 2.0 /4K2K@60Hz 2Port**
- DP connector/**DP1.2/4K2K@60Hz 2Port**
- **HDCP 2.2 support**
- Overdrive / Over scan Function
- 6 Color control
- PCM(Precise Color management)
- Sharpness/Hue/Color Support
- Gamma Control
- Color Effect Function
- Response time Control
- Remote Control
- UART for RS232 Control
- DP MST (Multi Stream, up to FHD 4 EA) or Daisy chain Output – Option
- Video Wall (up to 5 x 5 screens) - Option
- Speaker 10Wx 2ch
- Built-in LED Driver
  1ch-6ch selectable under 23W of backlight
  Maximum output current Up to 630Ma
  OVP(Over Voltage Protection) Voltage can be set

● Special Feature

Fashion Designed GUI (Graphic User Interface)
Titan perform the fashionable designed OSD Menu (GUI).

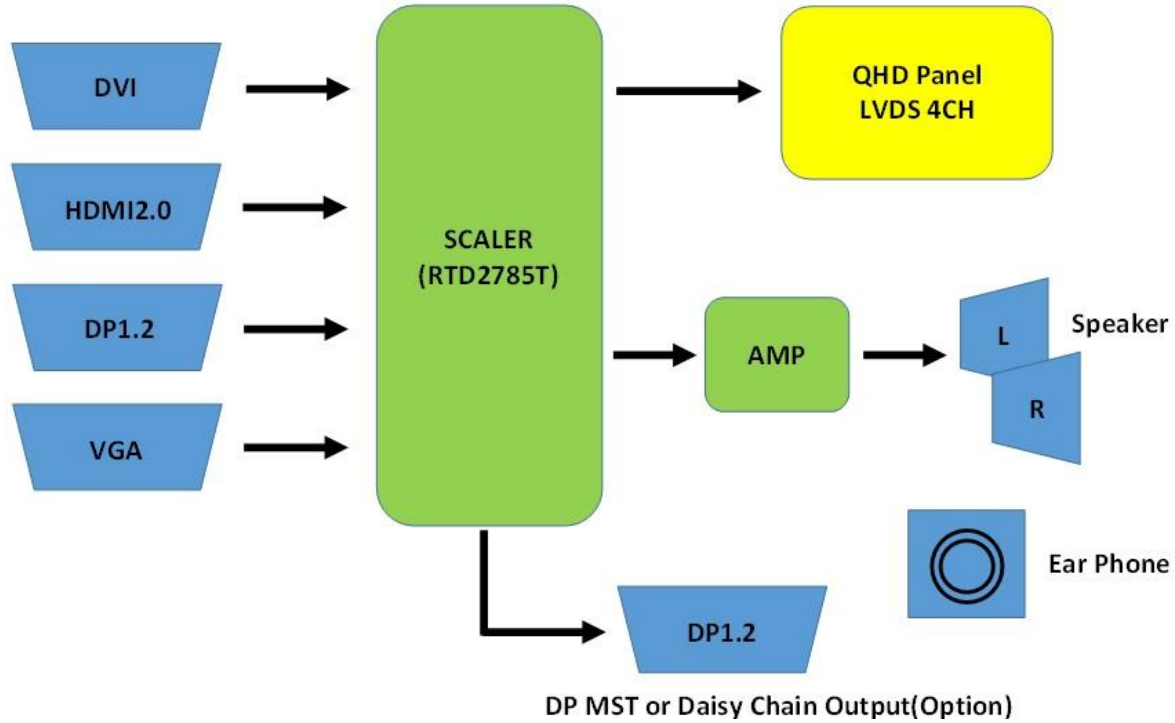
Extended panel power support range
The power circuit of Vcc has been sufficiently adopted for wide range up to 4A level by enlarged pattern design on the PCB.

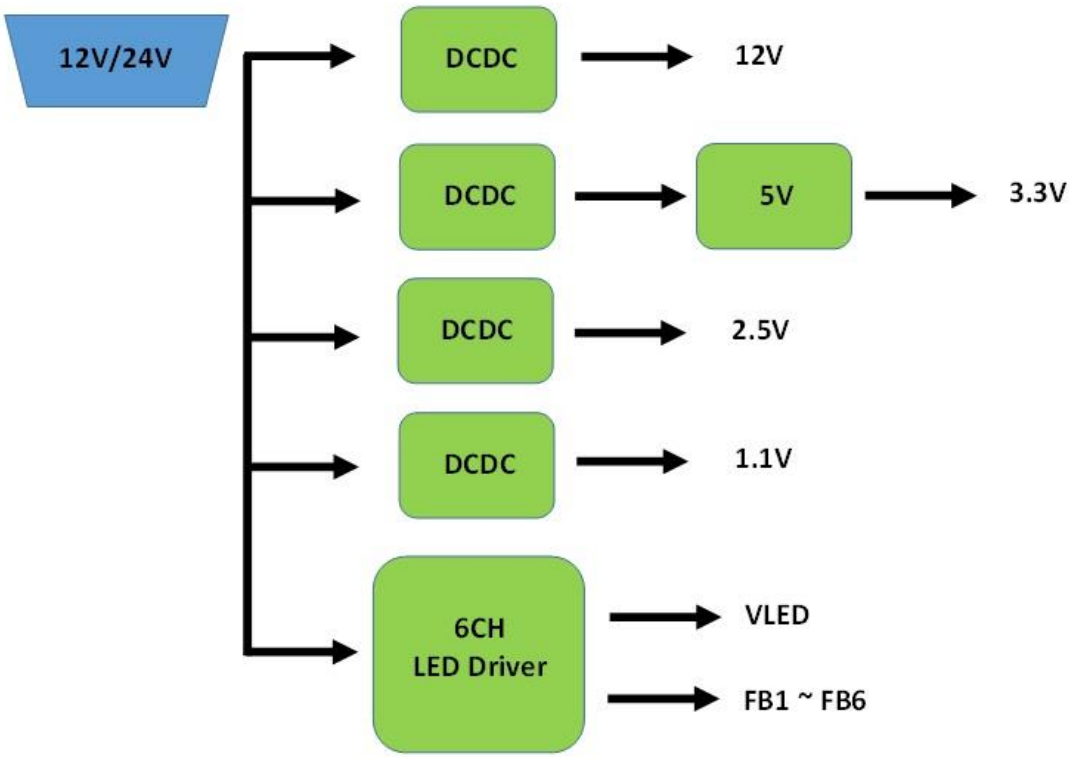
Various Languages
Total 9 kinds of languages can be provided depending on customer's choice

Wide Dimming Support
-. Supportable Contrast Ratio : 5000 : 1
-. Custom designed wide range type LED Driver Models are available (Supplemental Option)
-. Total 12 channels by 2 chip solution or total 24 channels by 4 chip solution (200mA/Channel)

2. Block Diagram

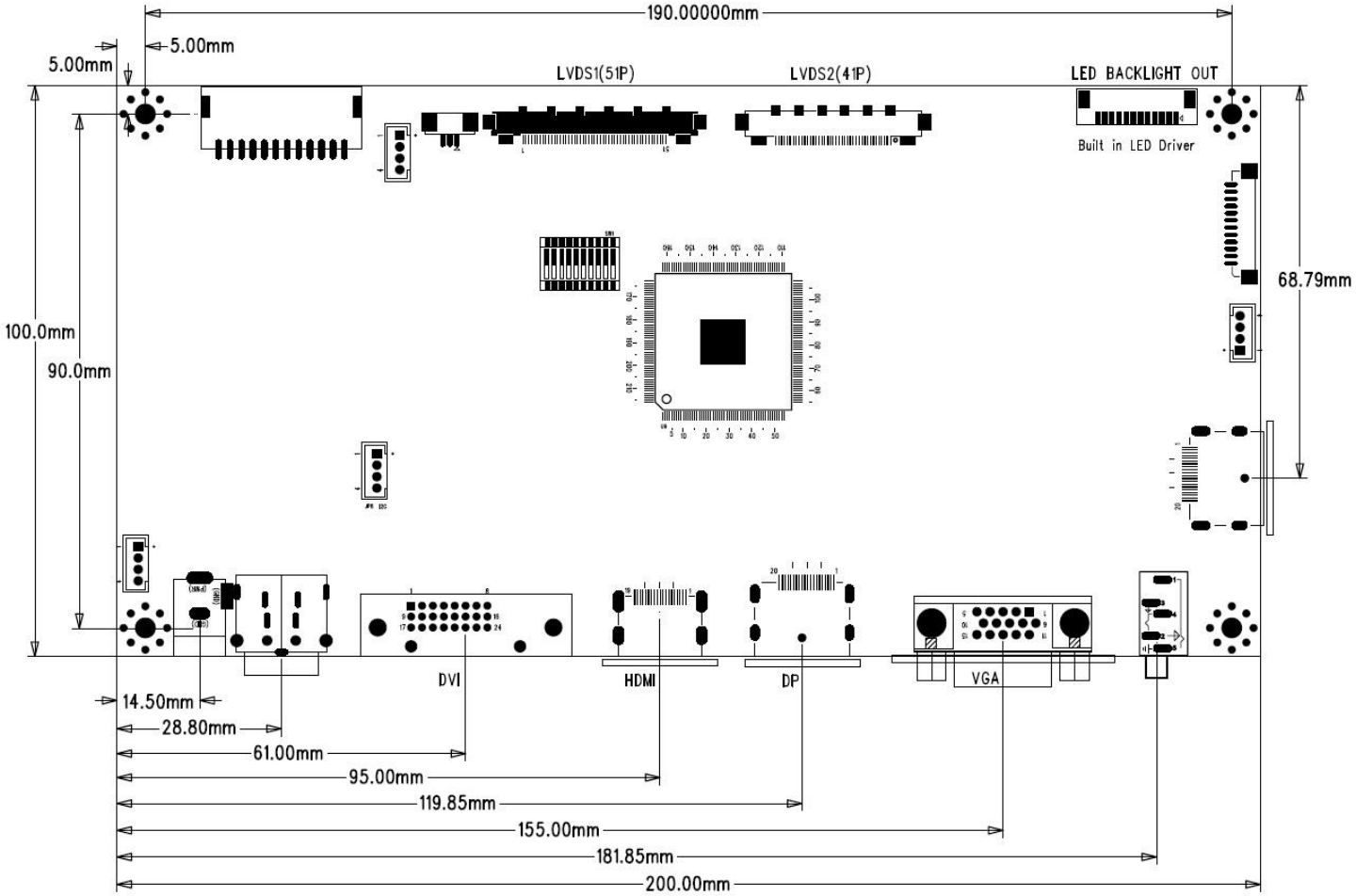
Standard version





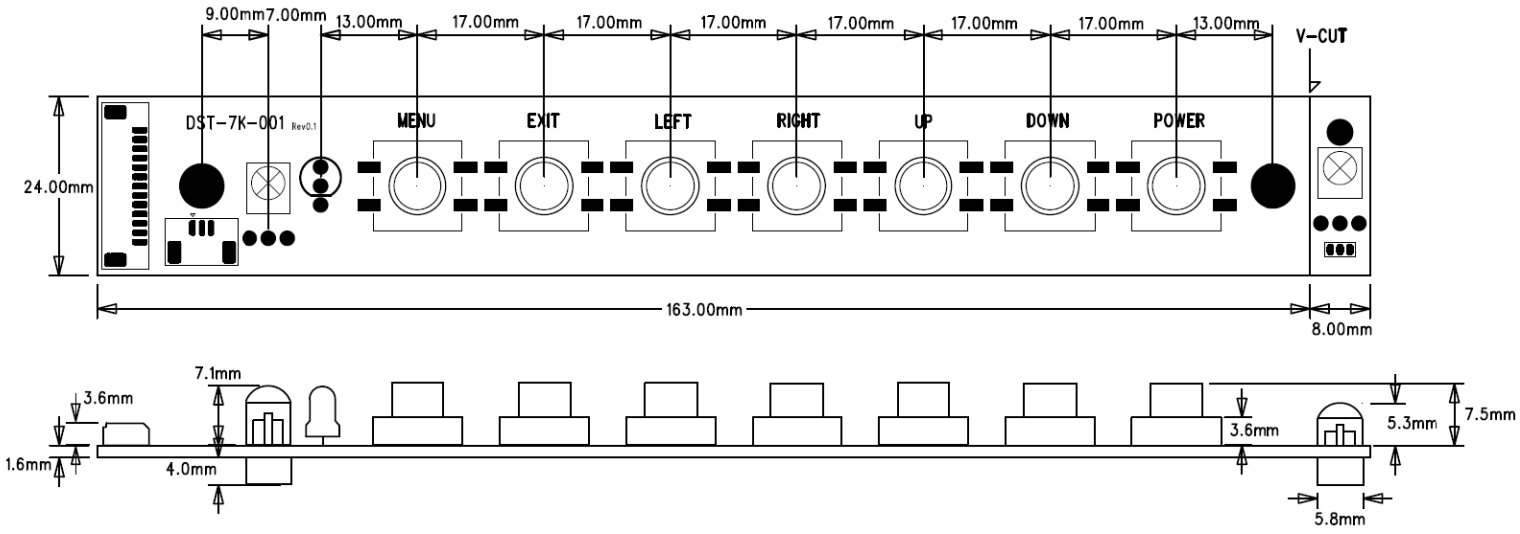
3. Board Dimensional Drawing

3.1 Main Board Drawing (unit : mm, 200 x 100 x 1.6)

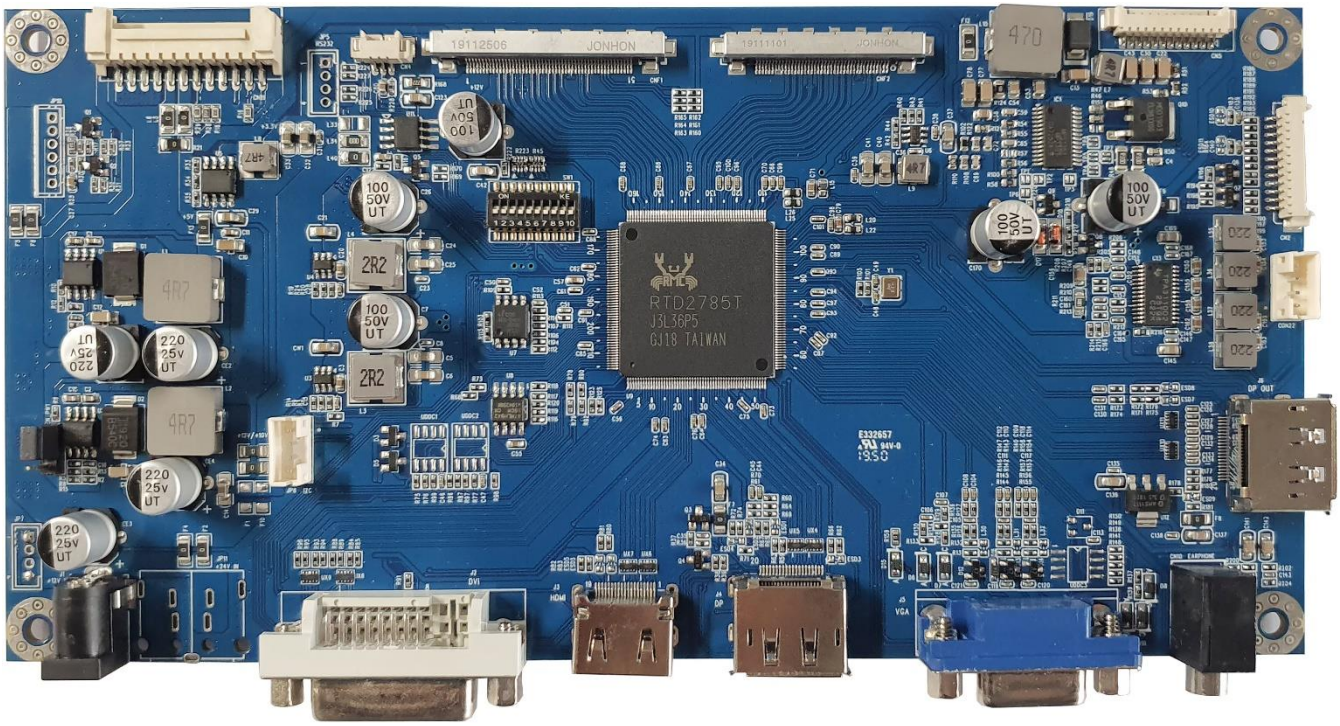


3.2 OSD Board Dimensional Drawing (unit : mm, 150 x 16 x 1.6)

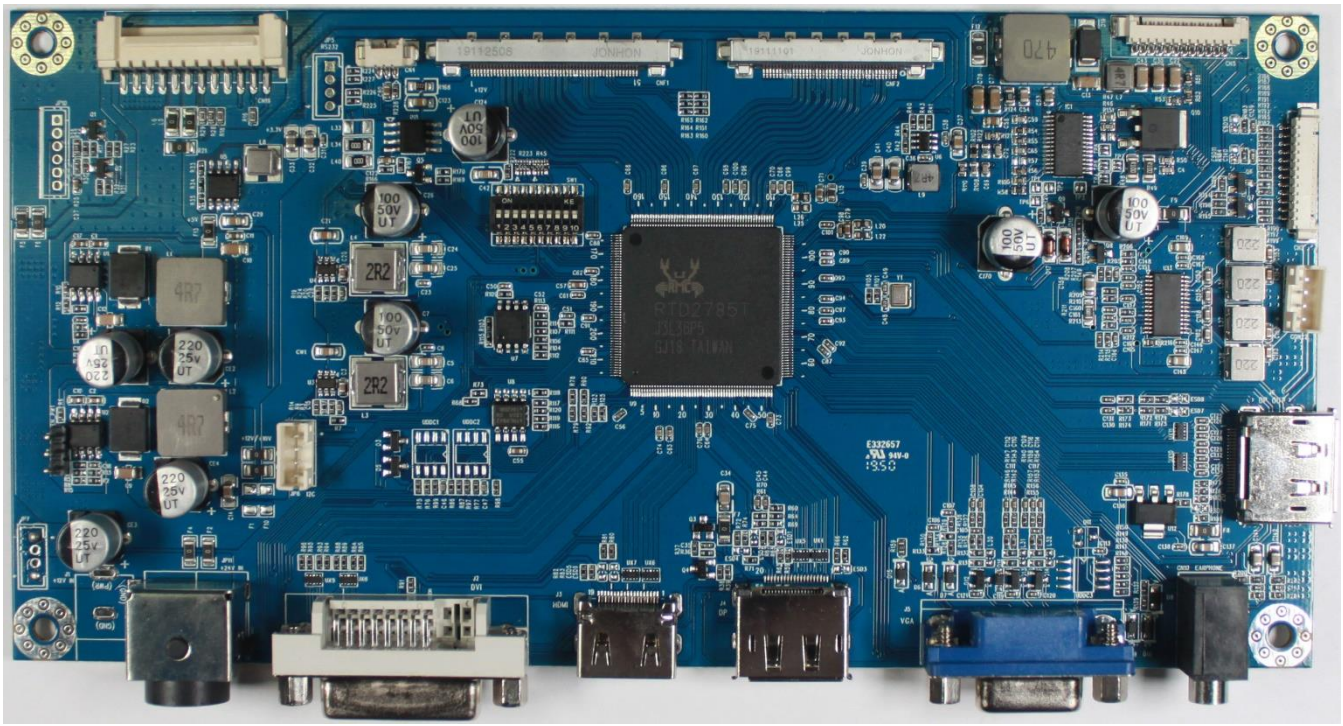
3.3 Pictures



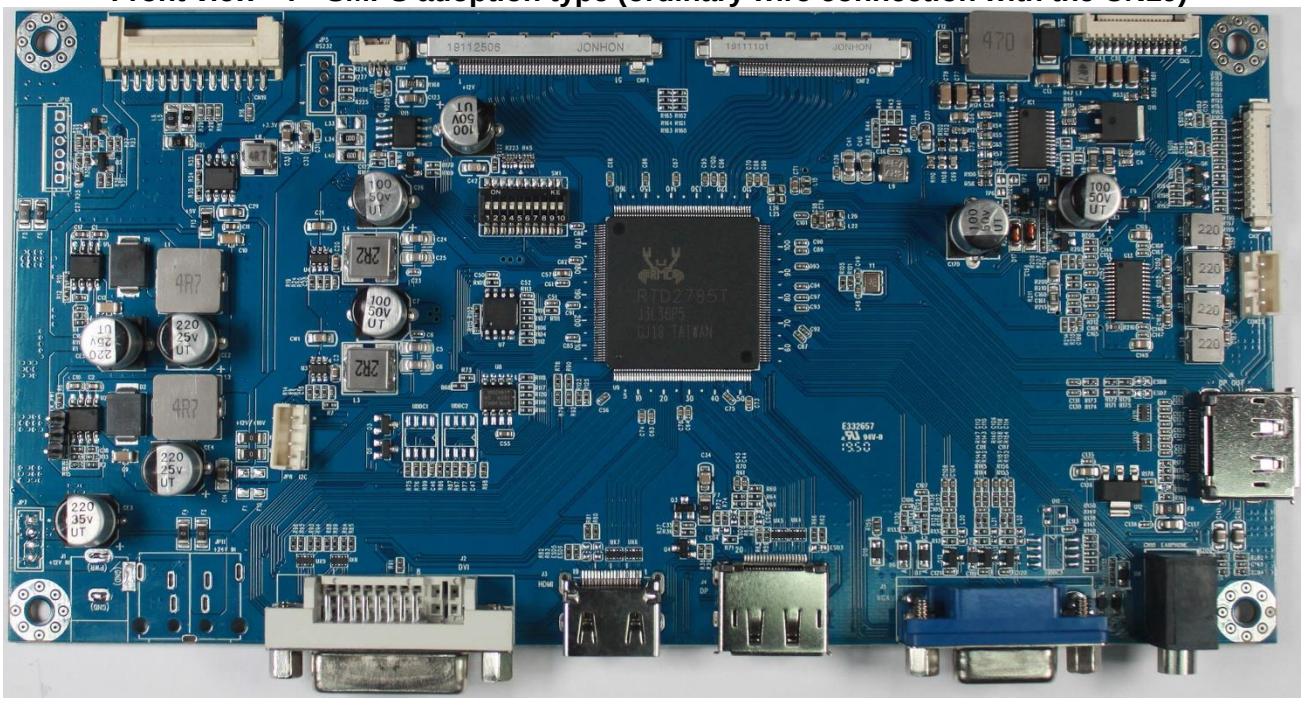
- **Front view : 12V Adaptor type (Barrel Jack)**



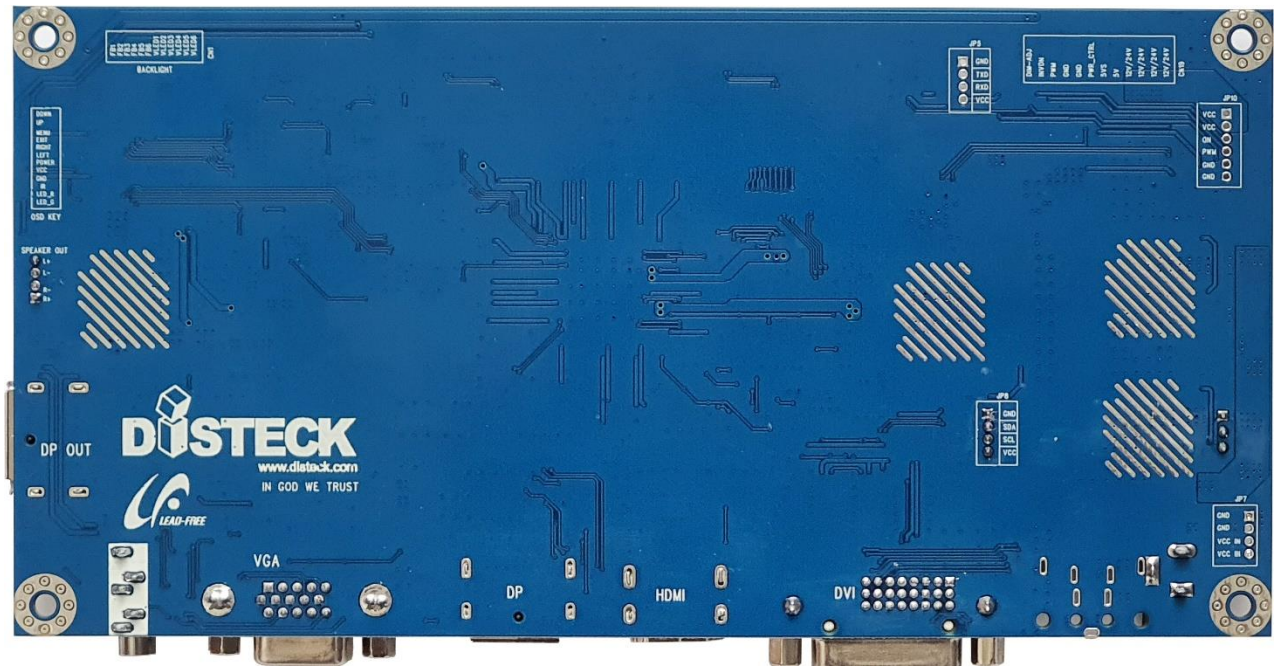
- **Front view : 24V Adaptor type (4 holes DIN Jack)**



- **Front view : SMPS adoption type (ordinary wire connection with the CN19)**



- **Rear view : there is no mounted any component**

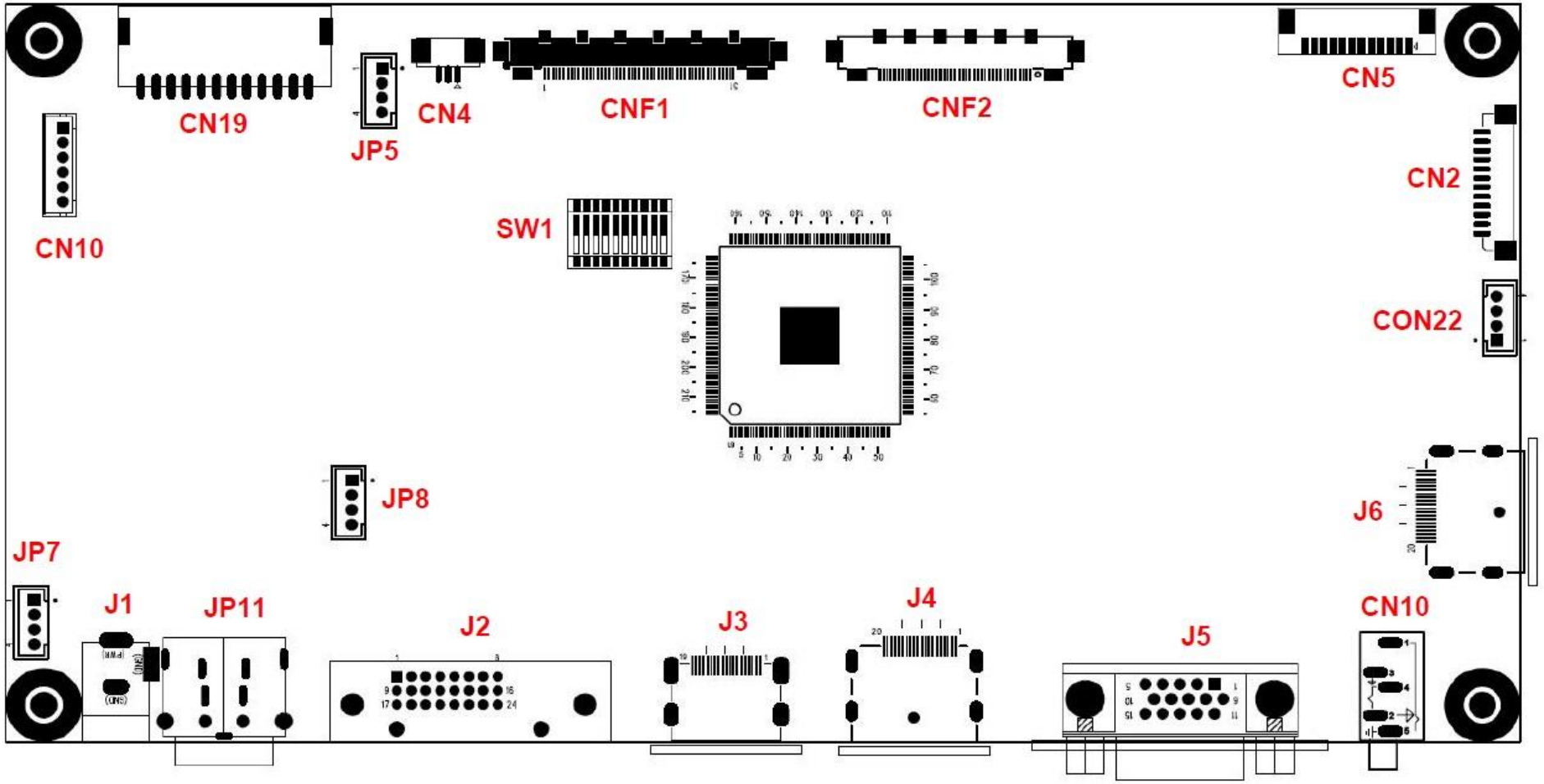


4. Connectors and Pin Information

4.1 Connector Summary

Reference	Item	Description	Type	Maker
CNF1	Wafer	For LVDS Output(51P)	FI-RE51S-HF	JAE or equivalent
CNF2	Wafer	For LVDS Output (41P)	FI-RE41S-HF	JAE or equivalent
CN5	Wafer	For LED Backlight Output	12505WR-12P	Yeon-Ho or equivalent
CN2	Wafer	For OSD Key Pad	12505WR-12P	Yeon-Ho or equivalent
CON22	Wafer	For Speaker	20010WS-04	Yeon-Ho or equivalent
J6	DP Jack	For DP Output, Daisy Chain	SD-47272-001	Molex or equivalent
CN10	Phone Jack	For Headphone Output	SJ3501-5 H7	Chang-Chun or equivalent
J5	VGA Jack	For VGA Input	DS1038-01	Connfly or equivalent
J4	DP Jack	For DP1.2 Input	SD-47272-001	Molex or equivalent
J3	HDMI Jack	For HDMI 2.0 Input	51L019S-36DN-A	Freeport or equivalent
J2	DVI Jack	For DVI Input	DS1090	Connfly or equivalent
JP11	DC Power Jack	For 24V DC Power	KPJX-4S-S	Chang-Chun or equivalent
J1	DC Power Jack	For 12V DC Power	DC-005(2.5Ø)	Chang-Chun or equivalent
JP7	Wafer	For 12V/24V DC Power	20010WS-04	Yeon-Ho or equivalent
JP8	Wafer	For I2C Control	SMW200-04	Yeon-Ho or equivalent
JP10	Wafer	For Inverter or SMPS	20010WS-06	Yeon-Ho or equivalent
CN19	Wafer	For Inverter or SMPS	20037WR-12P	Yeon-Ho or equivalent
JP5	Wafer	For RS232 Control	20010WS-04	Yeon-Ho or equivalent
CN4	Wafer	For SPDIF Output	12505WR-03	Yeon-Ho or equivalent
SW1	Dip Switch	For Panel Selection Switch	KHS-102	Otax or equivalent

All Connector Numbers on the PCB drawing

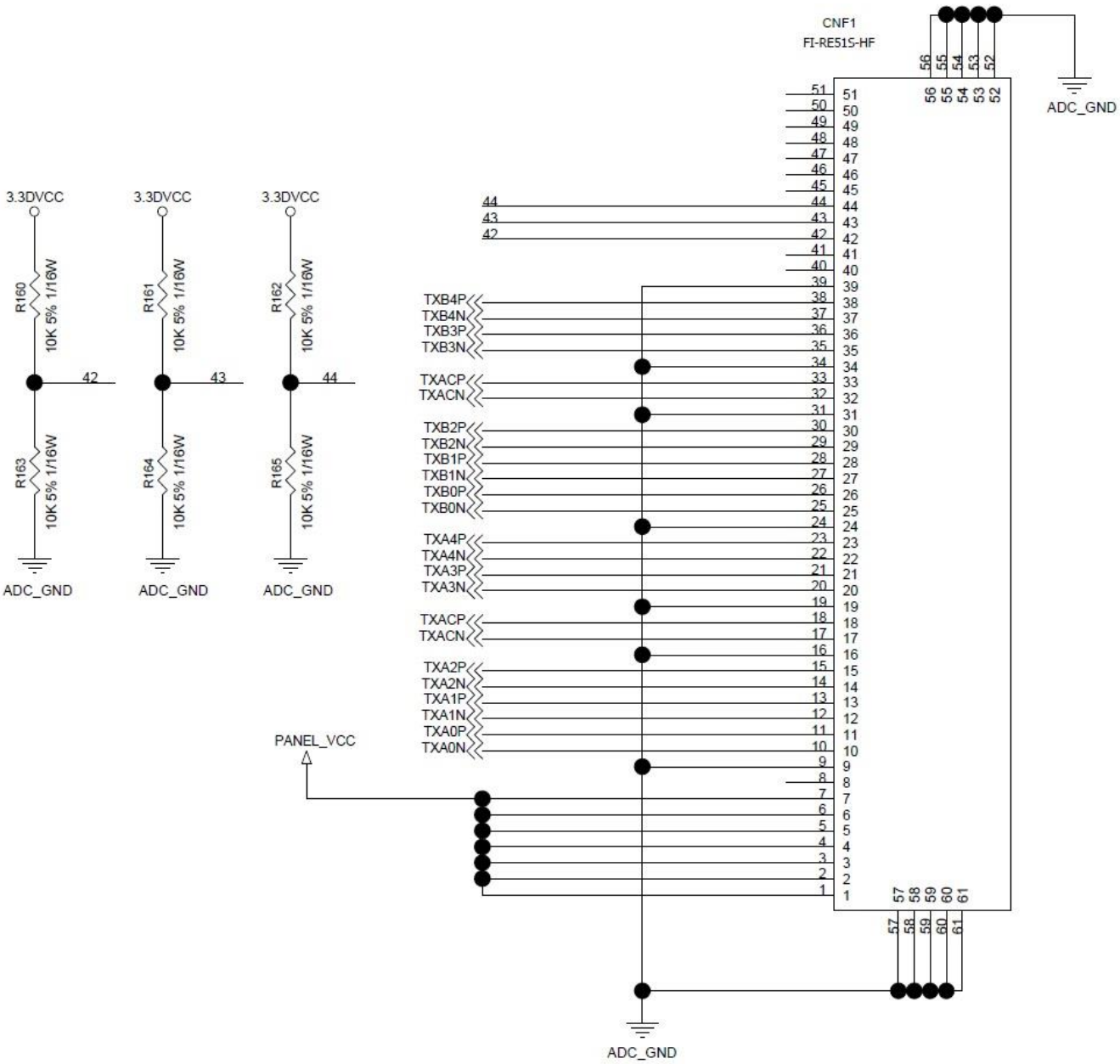


4.2 Pin Map Details (pin assignment)

4.2.1 CNF1 : LVDS Output : FI-RE51S-HF / 0.5mm, 51P, Right Angle / JAE

Pin No	Symbol	Description	Remarks
1~7	LCD_VDD	VDD For LCD Module	
8	N.C	No Connection	
9	GND	Ground	
10	CH1_0-	LVDS Channel 1, Signal 0-	
11	CH1_0+	LVDS Channel 1, Signal 0+	
12	CH1_1-	LVDS Channel 1, Signal 1-	
13	CH1_1+	LVDS Channel 1, Signal 1+	
14	CH1_2-	LVDS Channel 1, Signal 2-	
15	CH1_2+	LVDS Channel 1, Signal 2+	
16	GND	Ground	
17	CH1_CLK-	LVDS Channel 1, Clock-	
18	CH1_CLK+	LVDS Channel 1, Clock+	
19	GND	Ground	
20	CH1_3-	LVDS Channel 1, Signal 3-	
21	CH1_3+	LVDS Channel 1, Signal 3+	
22	CH1_4-	LVDS Channel 1, Signal 4-	
23	CH1_4+	LVDS Channel 1, Signal 4+	
24	GND	Ground	
25	CH2_0-	LVDS Channel 2, Signal 0-	
26	CH2_0+	LVDS Channel 2, Signal 0+	
27	CH2_1-	LVDS Channel 2, Signal 1-	
28	CH2_1+	LVDS Channel 2, Signal 1+	
29	CH2_2-	LVDS Channel 2, Signal 2-	
30	CH2_2+	LVDS Channel 2, Signal 2+	
31	GND	Ground	
32	CH2_CLK-	LVDS Channel 2, Clock-	
33	CH2_CLK+	LVDS Channel 2, Clock+	
34	GND	Ground	
35	CH2_3-	LVDS Channel 2, Signal 3-	
36	CH2_3+	LVDS Channel 2, Signal 3+	
37	CH2_4-	LVDS Channel 2, Signal 4-	
38	CH2_4+	LVDS Channel 2, Signal 4+	
39	GND	Ground	
40~41	NC	No Connection	
42~44	RESERVED	OPTION	
45~51	NC	No Connection	

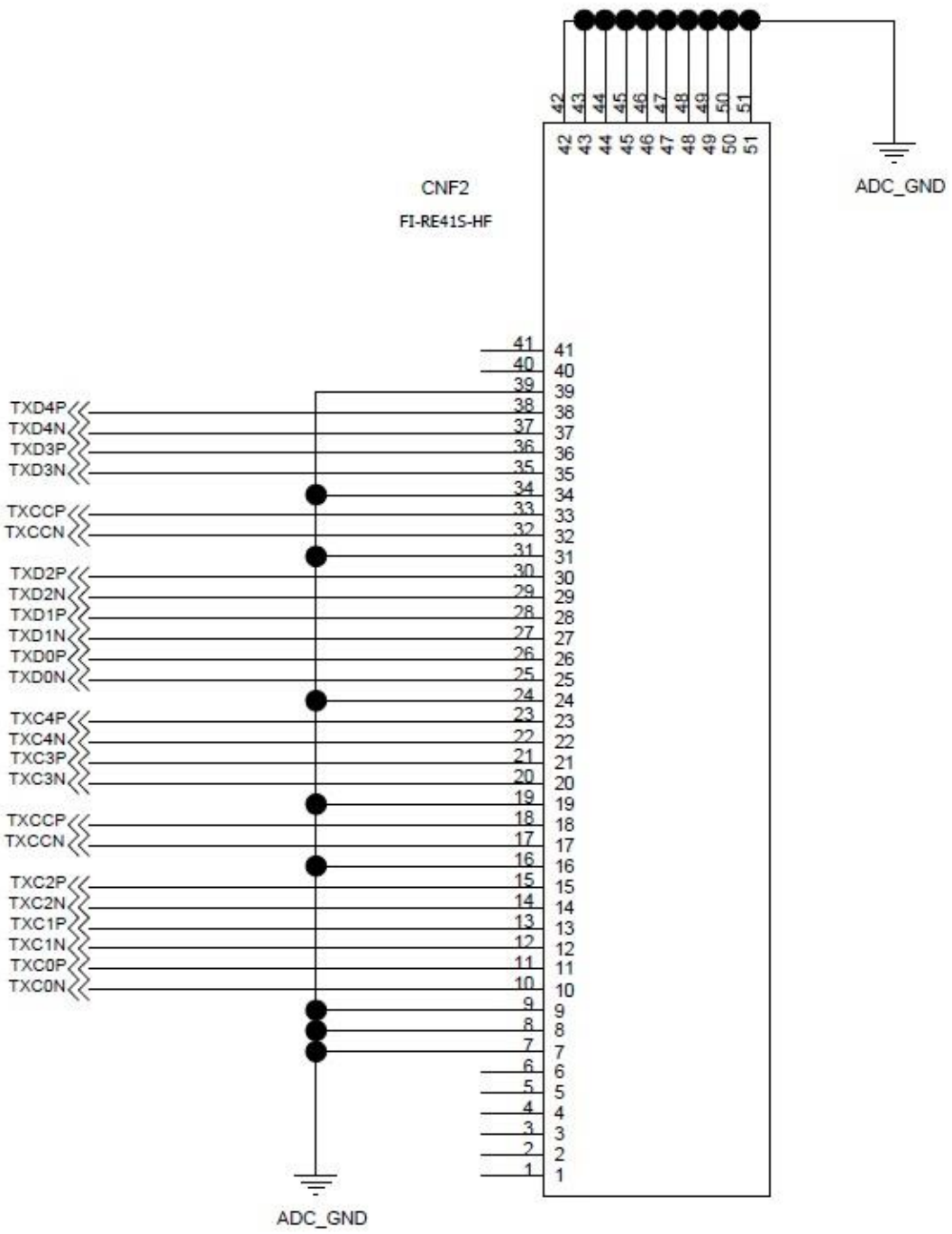
Equivalent Circuit Diagram



4.2.2 CNF2 : LVDS Output : FI-RE41S-HF / 0.5mm, 41P, Right Angle / JAE

Pin No	Symbol	Description	Remarks
1~6	N.C	No Connection	
7~9	GND	Ground	
10	CH3_0-	LVDS Channel 3, Signal 0-	
11	CH3_0+	LVDS Channel 3, Signal 0+	
12	CH3_1-	LVDS Channel 3, Signal 1-	
13	CH3_1+	LVDS Channel 3, Signal 1+	
14	CH3_2-	LVDS Channel 3, Signal 2-	
15	CH3_2+	LVDS Channel 3, Signal 2+	
16	GND	Ground	
17	CH3_CLK-	LVDS Channel 3, Clock-	
18	CH3_CLK+	LVDS Channel 3, Clock+	
19	GND	Ground	
20	CH3_3-	LVDS Channel 3, Signal 3-	
21	CH3_3+	LVDS Channel 3, Signal 3+	
22	CH3_4-	LVDS Channel 3, Signal 4-	
23	CH3_4+	LVDS Channel 3, Signal 4+	
24	GND	Ground	
25	CH4_0-	LVDS Channel 4, Signal 0-	
26	CH4_0+	LVDS Channel 4, Signal 0+	
27	CH4_1-	LVDS Channel 4, Signal 1-	
28	CH4_1+	LVDS Channel 4, Signal 1+	
29	CH4_2-	LVDS Channel 4, Signal 2-	
30	CH4_2+	LVDS Channel 4, Signal 2+	
31	GND	Ground	
32	CH4_CLK-	LVDS Channel 4, Clock-	
33	CH4_CLK+	LVDS Channel 4, Clock+	
34	GND	Ground	
35	CH4_3-	LVDS Channel 4, Signal 3-	
36	CH4_3+	LVDS Channel 4, Signal 3+	
37	CH4_4-	LVDS Channel 4, Signal 4-	
38	CH4_4+	LVDS Channel 4, Signal 4+	
39	GND	Ground	
40	N.C	No Connection	
41	N.C	No Connection	

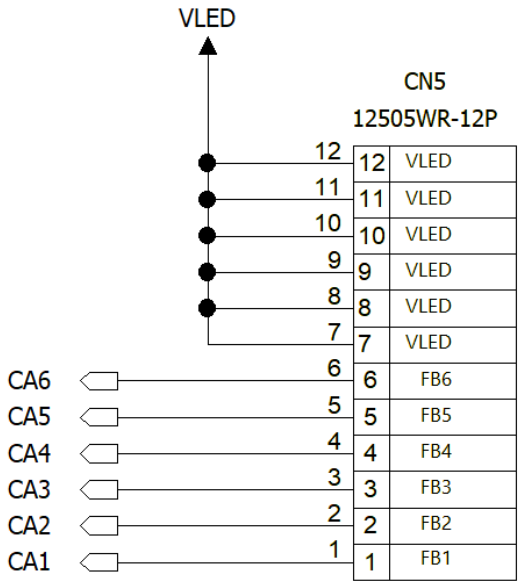
Equivalent Circuit Diagram



4.2.3 CN5 : LED Backlight Output, Wafer

Pin No	Symbol	Description	Remarks
1	RTN1	CATHODE1(Return1) – FB1	
2	RTN2	CATHODE2(Return2) – FB2	
3	RTN3	CATHODE3(Return3) – FB3	
4	RTN4	CATHODE4(Return4) – FB4	
5	RTN5	CATHODE5(Return5) – FB5	
6	RTN6	CATHODE6(Return6) – FB6	
7	VLED	ANODE - VLED	
8	VLED	ANODE - VLED	
9	VLED	ANODE - VLED	
10	VLED	ANODE - VLED	
11	VLED	ANODE - VLED	
12	VLED	ANODE - VLED	

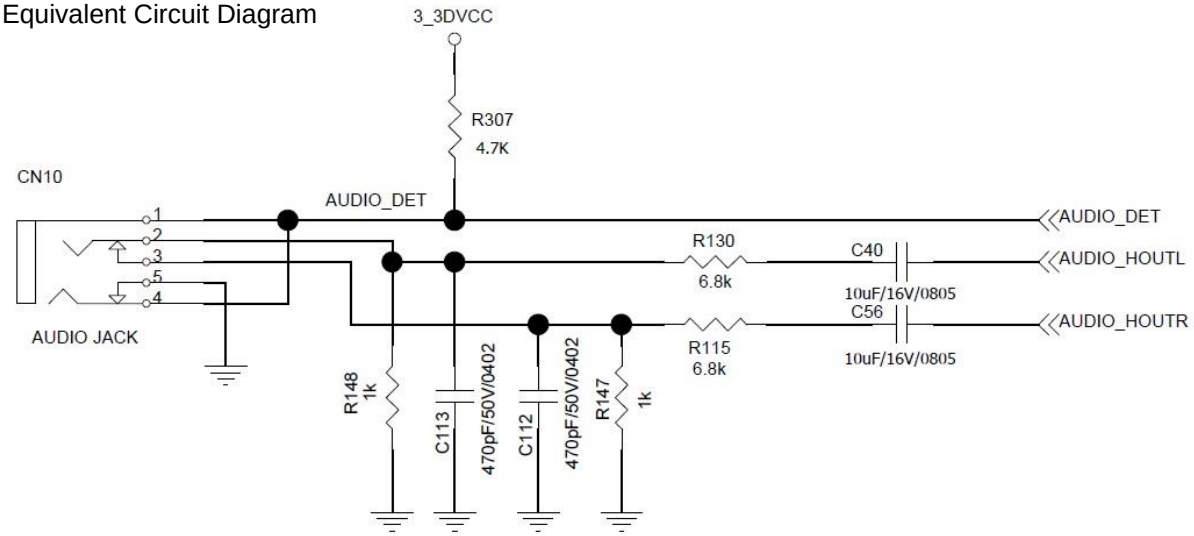
Equivalent Circuit Diagram



4.2.4 CN10 : for Audio Output, Head Phone Jack

Pin No	Symbol	Description	Remarks
1, 4	DET	Detection	
2	L	Audio Left Input Signal	
3	R	Audio Right Input Signal	
5	GND	Ground	

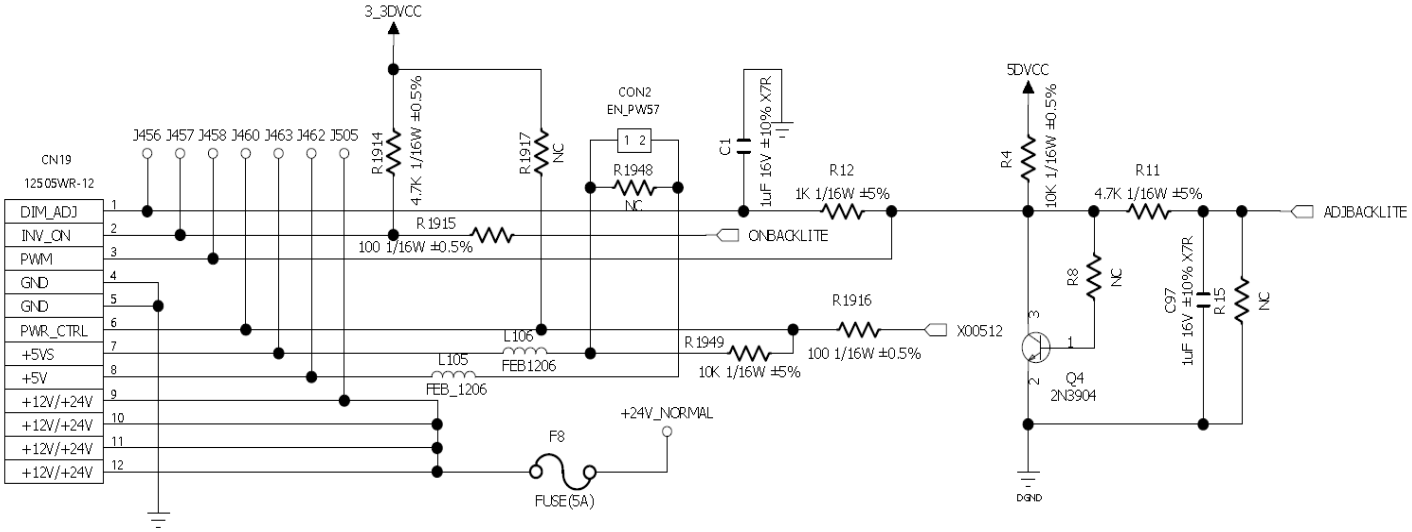
Equivalent Circuit Diagram



4.2.5 CN19 : for Inverter/LED Driver or SMPS. Wafer

Pin No	Symbol	Description	Remarks
1	DIM-ADJ	Dimming Adjustment	
2	INVON	Invert Power On, Off	0V (Off), 3.3V(On)
3	PWM	PWM Dimming Control	
4, 5	GND	Ground	
6	PWR_CTRL	Power Control Out (SMPS), NC (Inverter)	0V (Off), 3.3V(On)
7	5VS	5VS In (SMPS), NC(Inverter)	5V ± 1%
8	5V	5V In (SMPS), NC(Inverter)	5V ± 1%
9, 10, 11, 12	24V	24V In or 12V In(SMPS), 24V Out(Inverter)	24V ± 5% 12V ± 3%

Equivalent Circuit Diagram

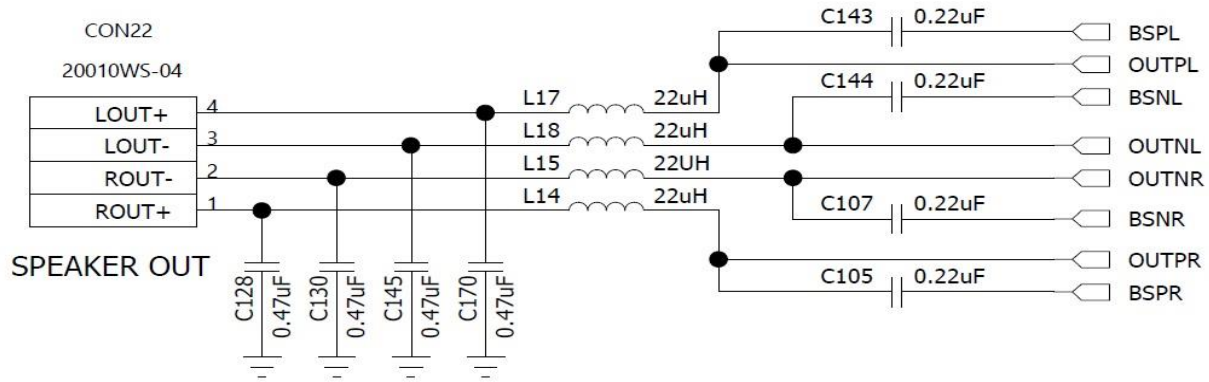


Inverter/LED Driver or SMPS

4.2.6 CON22 : for Speaker, Wafer

Pin No	Symbol	Description	Remarks
1	SP_R+	Audio Right Speaker Output Positive	
2	SP_R-	Audio Right Speaker Output Negative	
3	SP_L-	Audio Left Speaker Output Negative	
4	SP_L+	Audio Left Speaker Output Positive	

Equivalent Circuit Diagram

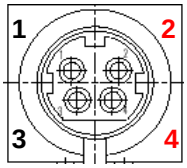


4.2.7 J1 : for 12V DC Power, Jack

Pin No	Symbol	Description	Remarks
1	12V	12V Power Input	12V ± 5%
2, 3	GND	Ground	

4.2.8 JP11 : for 24V DC Power, Jack

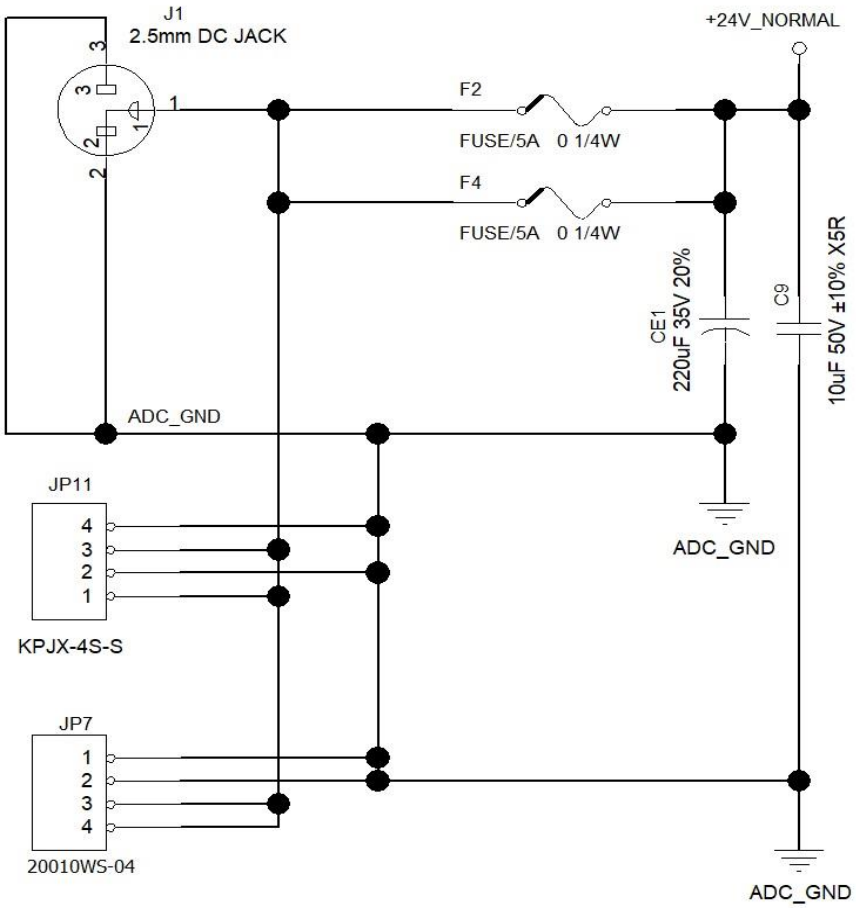
Pin No	Symbol	Description	Remarks
1,3	GND	Ground	
2,4	24V	24V Power Input	



4.2.9 JP7 : for 12V/24V DC Power, Wafer

Pin No	Symbol	Description	Remarks
1, 2	GND	Ground	
3, 4	12V/24V	12V/24V Power Input	

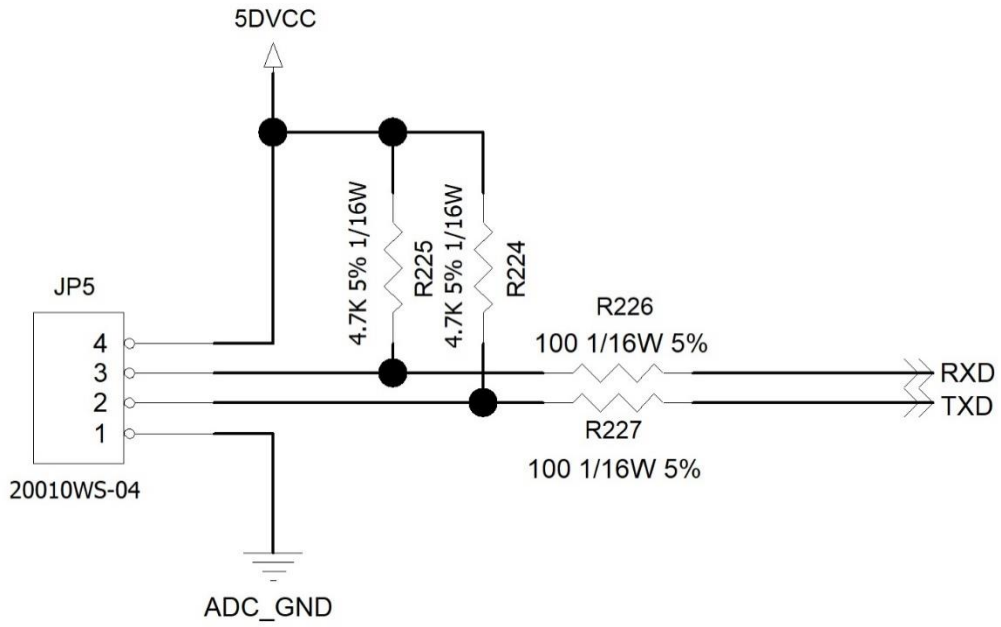
Equivalent Circuit Diagram



4.2.10 JP5 : for RS232 Control, Wafer

Pin No	Symbol	Description	Remarks
1	STB_5V	5V Power	
2	RXD	Signal For RX	
3	TXD	Signal for TX	
4	GND	Ground	

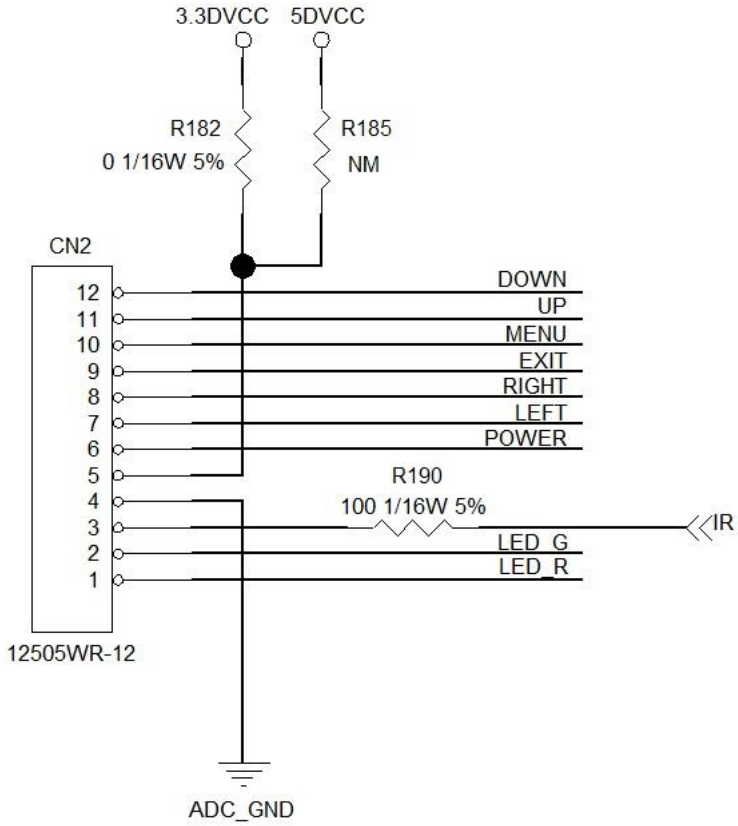
Equivalent Circuit Diagram



4.2.11 CN2 : for OSD Control Key, Wafer

Pin No	Symbol	Description	Remarks
1	LED Red Key	LED drive for Red Color	
2	LED Green_Key	LED drive for Green Color	
3	IR_Key	IR Receiver	
4	GND	Ground	
5	3.3V_Key	3.3V	
6	PWR_Key	POWER key	
7	Left_Key	Left key	
8	Right_Key	Right key	
9	Exit_Key	Exit_Key	
10	Menu_Key	Menu key	
11	Up_Key	Up key	
12	Down_Key	Down key	

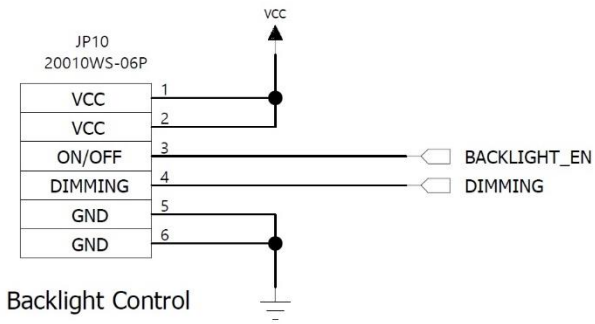
Equivalent Circuit Diagram



4.2.12 JP10 : for LED Driver Control Power

Pin No	Symbol	Description	Remarks
1	+24	+12V/+24V DC Power Supply	
2	+24	+12V/+24V DC Power Supply	
3	EN	Backlight ON/OFF	
4	ADJ	PWM/Analog Dimming	
5	GND	Ground	
6	GND	Ground	

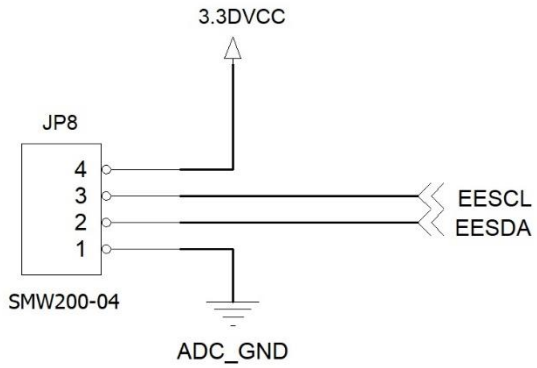
Equivalent Circuit Diagram



4.2.13 JP8 : for I2C Control, Wafer

Pin No	Symbol	Description	Remarks
1	GND	Ground	
2	SCL	Signal for SCL	
3	SDA	Signal for SDA	
4	VCC	3.3V Power	

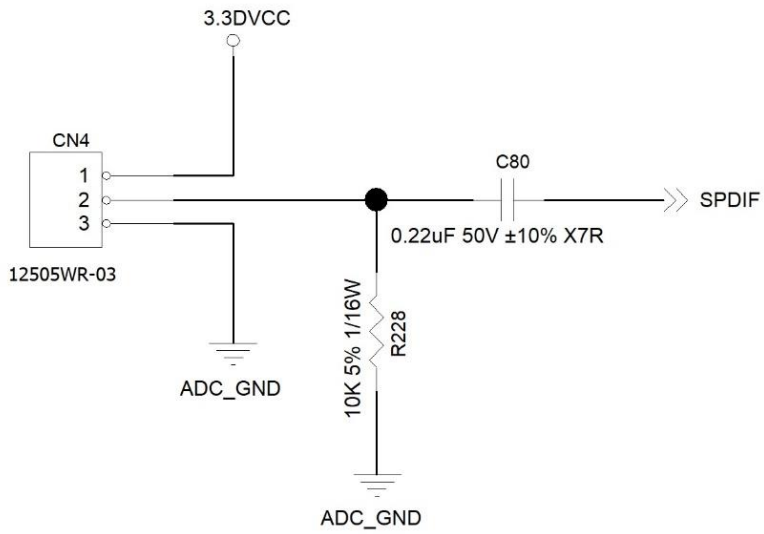
Equivalent Circuit Diagram



4.2.14 CN4 : for SPDIF Output, Wafer

Pin No	Symbol	Description	Remarks
1	VCC	3.3V Power	
2	SPDIF	Signal for SPDIF	
3	GND	Ground	

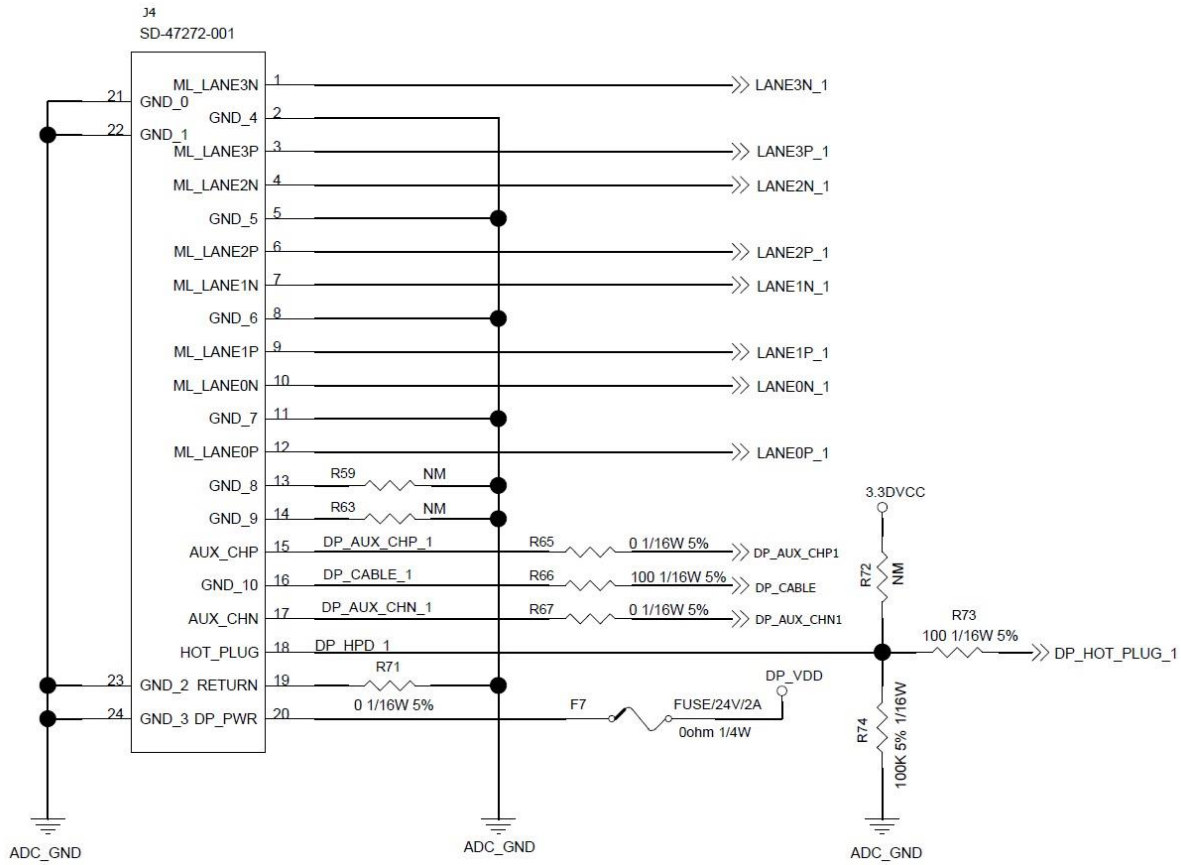
Equivalent Circuit Diagram



4.2.15 J4 : for DP Input, DP Jack

Pin No	Symbol	Description	Remarks
1	LANE3-	Negative Signal for Main Link 3	
3	LANE3+	Positive Signal for Main Link 3	
4	LANE2-	Negative Signal for Main Link 2	
6	LANE2+	Positive Signal for Main Link 2	
7	LANE1-	Negative Signal for Main Link 1	
9	LANE1+	Positive Signal for Main Link 1	
10	LANE0-	Negative Signal for Main Link 0	
12	LANE0+	Positive Signal for Main Link 0	
13	CONFIG1	Pull down resister 100KR	
14	CONFIG2	Pull down resister 100KR	
15	AUX CH+	Positive Signal for Auxiliary Channel	
17	AUX CH-	Negative Signal for Auxiliary Channel	
18	HPD	Hot Plug Detection	
19	RETURN	NO Connection	
20	PWR OUT	3.3V	
2, 5, 8, 11, 16, 21, 22, 23, 24	GND	Ground	

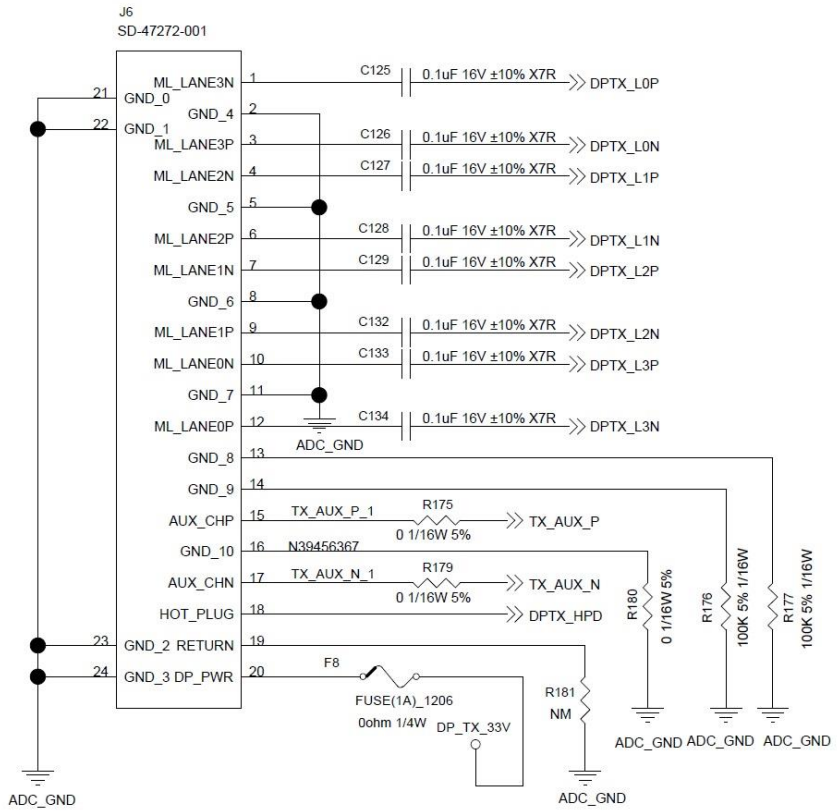
Equivalent Circuit Diagram



4.2.16 J6 : for DP Output, DP Jack(Daisy Chain : Option)

Pin No	Symbol	Description	Remarks
1	LANE0+	Positive Signal for Main Link 0	
3	LANE0-	Negative Signal for Main Link 0	
4	LANE1+	Positive Signal for Main Link 1	
6	LANE1-	Negative Signal for Main Link 1	
7	LANE2+	Positive Signal for Main Link 2	
9	LANE2-	Negative Signal for Main Link 2	
10	LANE3+	Positive Signal for Main Link 3	
12	LANE3-	Negative Signal for Main Link 3	
13	CONFIG1	Pull down resister 100KR	
14	CONFIG2	Pull down resister 100KR	
15	AUX CH+	Positive Signal for Auxiliary Channel	
17	AUX CH-	Negative Signal for Auxiliary Channel	
18	HPD	Hot Plug Detection	
19	RETURN	No Connection	
20	PWR OUT	3.3V	
2, 5, 8, 11, 16, 21, 22, 23, 24	GND	Ground	

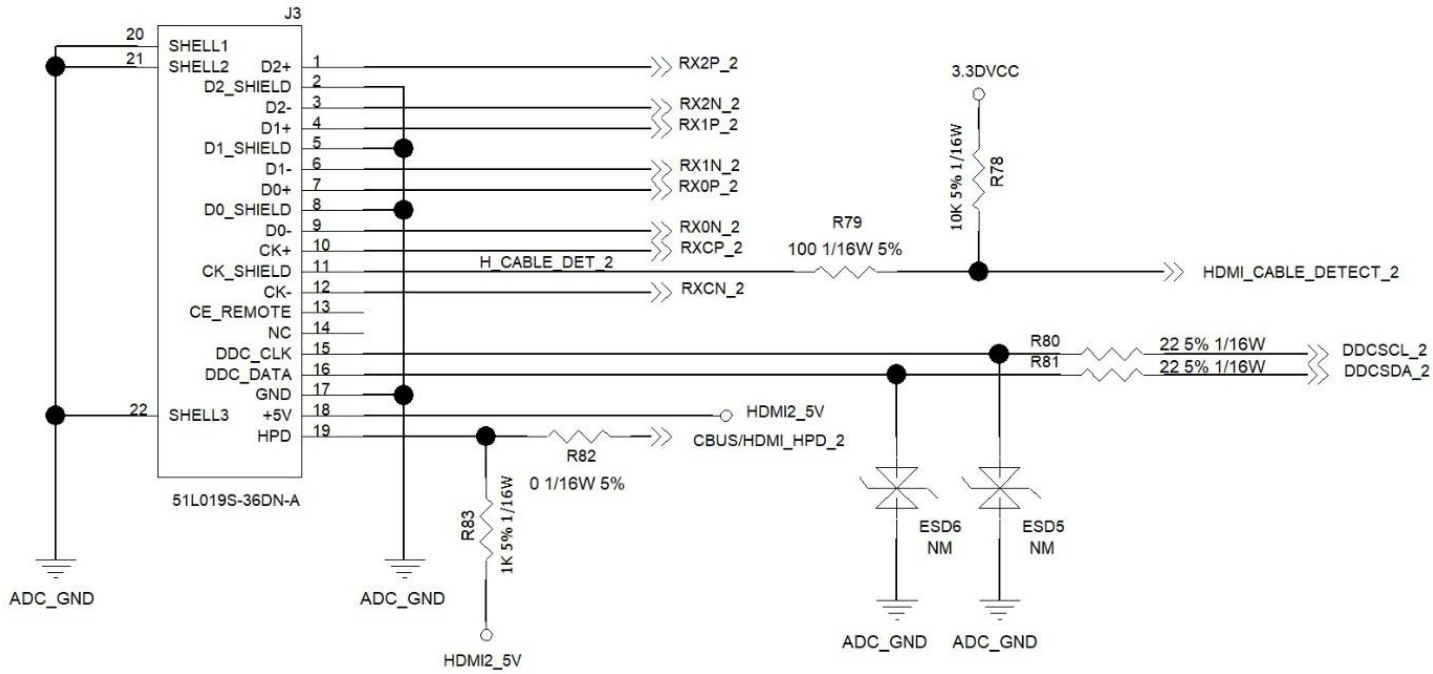
Equivalent Circuit Diagram



4.2.17 J3 : for HDMI Input, HDMI Jack

Pin No	Symbol	Description	Remarks
1	RX2+	HDMI DATA2 Differential Positive Signal	
2	GND	Ground	
3	RX2-	HDMI DATA2 Differential Negative Signal	
4	RX1+	HDMI DATA1 Differential Positive Signal	
5	GND	Ground	
6	RX1-	HDMI DATA1 Differential Negative Signal	
7	RX0+	HDMI DATA0 Differential Positive Signal	
8	GND	Ground	
9	RX0-	HDMI DATA0 Differential Negative Signal	
10	RXC+	HDMI CLOCK Differential Positive Signal	
11	H_CABLE_DET_2	HDMI_CABLE_DETECT_2	
12	RXC-	HDMI CLOCK Differential Negative Signal	
13,14	NC	NO CONNECTION	
15	HDMI_SCL	HDMI Clock Line	
16	HDMI_SDA	HDMI Data Line	
17	GND	Ground	
18	HDMI_DDC5V	5V Power Supply	
19	HDMI_HOT_PLUG	HDMI Hot Plug	
20,21, 22	GND	Ground	

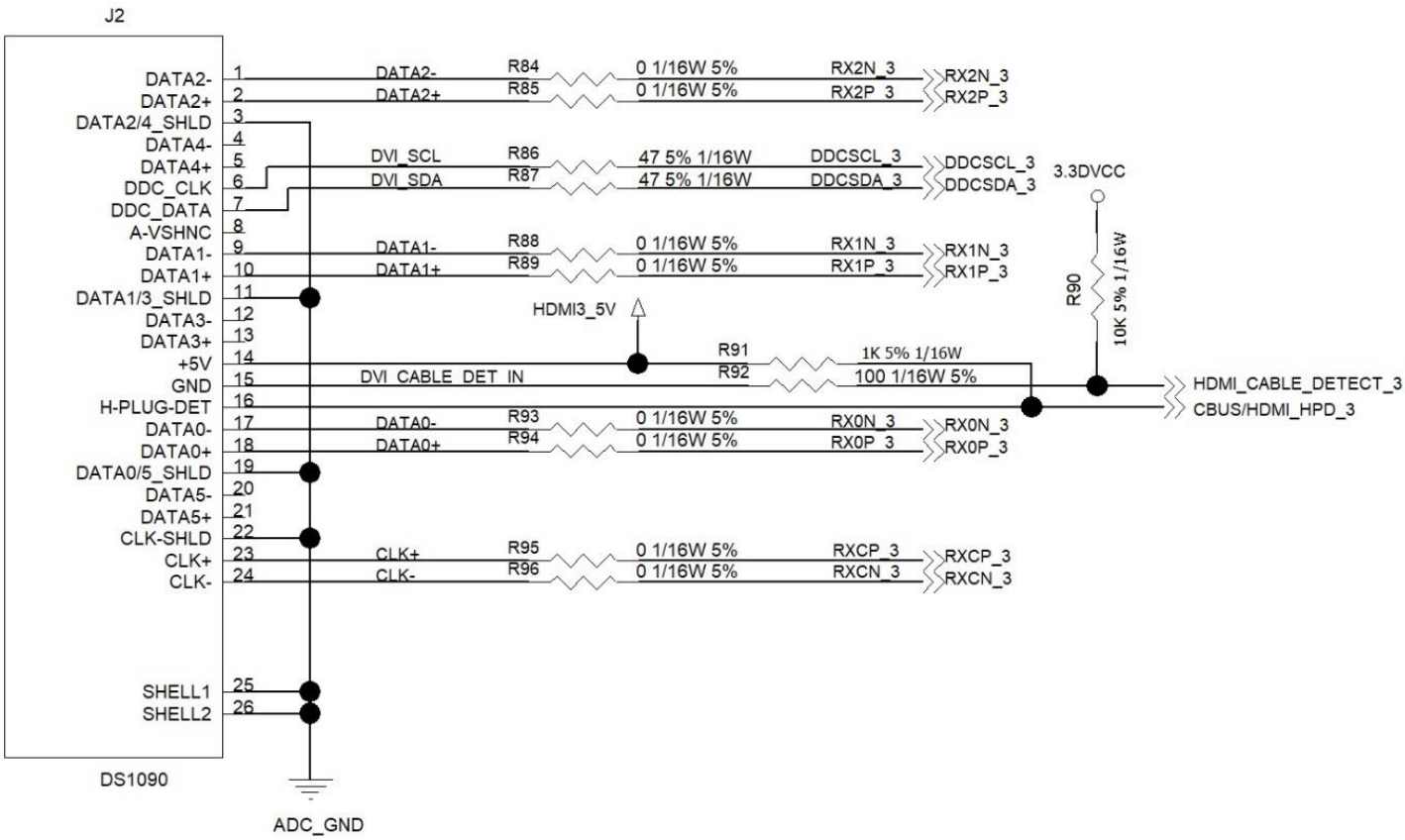
Equivalent Circuit Diagram



4.2.18 J2 : for DVI Input, DVI Jack

Pin No	Symbol	Description	Remarks
1	RX2N	DVI DATA2 Differential Negative Signal	
2	RX2P	DVI DATA2 Differential Positive Signal	
4, 5	N.C	NO CONNECTION	
6	DDC_SCL	DVI Clock Line	
7	DDC_SDA	DVI Data Line	
8	N.C	NO CONNECTION	
9	RX1N	DVI DATA1 Differential Negative Signal	
10	RX1P	DVI DATA1 Differential Positive Signal	
12, 13	N.C	NO CONNECTION	
14	+5V	5V Power Supply	
15	H_CABLE_DET	DVI_CABLE_DETECT	
16	HOT_PLUG	DVI Hot Plug	
17	RX0N	DVI DATA0 Differential Negative Signal	
18	RX0P	DVI DATA0 Differential Positive Signal	
20, 21	NC	NO CONNECTION	
23	RXCP	DVI CLOCK Differential Positive Signal	
24	RXCN	DVI CLOCK Differential Positive Signal	
3, 11, 19, 22, 25, 26	GND	Ground	

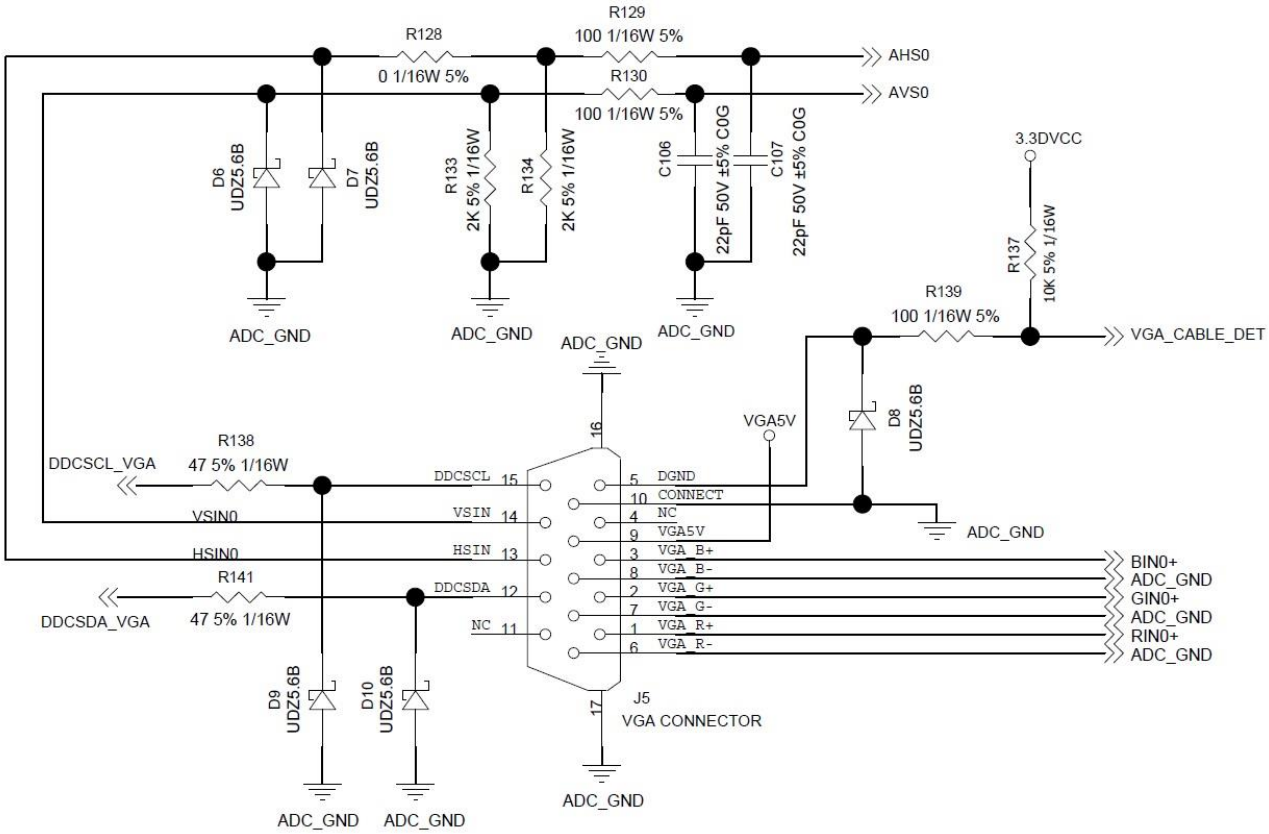
Equivalent Circuit Diagram



4.2.19 J5 : for VGA Input, VGA Jack

Pin No	Symbol	Description	Remarks
1	R_IN	Red Video Signal IN	
2	G_IN	Green Video Signal IN	
3	B_IN	Blue Video Signal IN	
4	N.C	Not Connected	
5	GND	Ground	
6	R_RTN	Red Video Signal Return	
7	G_RTN	Green Video Signal Return	
8	B_RTN	Blue Video Signal Return	
9	N.C	Not Connected	
10	GND	Ground	
11	N.C	Not Connected	
12	SDA	I2C_Data	
13	HSYNC	Horizontal Synchronization Signal	
14	VSYNC	Vertical Synchronization Signal	
15	SCL	I2C_Clock	

Equivalent Circuit Diagram



5. Applicable Graphic Mode

The microprocessor measures the H-sync, V-sync and V-sync/H-sync polarity for RGB inputs, and uses this timing information to control all of the display operation to get the proper image on a screen. This board can detect all VESA standard and MAC Graphic modes shown on the table below and provide more clear and stable image on a screen.
RGB & DIVI Input format

Resolution	Pixel Freq.	Horizontal Timing				Vertical Timing			
		Sync Polar	Freq.	Total	Active	Sync Polar	Freq.	Total	Active
	MHz		KHz	Pixel	Pixel		Hz	Line	Line
640x350 @70Hz	25.144 VESA	P	31.430	800	640	N	70.000	449	350
720x400 @70Hz	28.287 VESA	N	31.430	900	720	P	70.000	449	400
640x480 @60Hz	25.175 MAC	N	31.469	800	640	N	59.940	525	480
640x480 @60Hz	25.175 VESA	N	31.469	800	640	N	59.940	525	480
640x480 @67Hz	30.240 MAC	N	35.000	864	640	N	66.667	525	480
640x480 @72Hz	31.500 VESA	N	37.861	832	640	N	72.809	520	480
640x480 @75Hz	31.500 VESA	N	37.500	840	640	N	75.000	500	480
832x624 @75Hz	57.284 MAC	N	49.726	1152	832	N	74.551	667	624
800x600 @56Hz	36.000 VESA	P	35.156	1024	800	P	56.250	625	600
800x600 @60Hz	40.000 VESA	P	37.879	1056	800	P	60.317	628	600
800x600 @72Hz	50.000 VESA	P	48.077	1040	800	P	72.188	666	600
800x600 @75Hz	49.500 VESA	P	46.875	1056	800	P	75.000	625	600
1024x768 @60Hz	65.000 VESA	N	48.363	1344	1024	N	60.005	806	768
1024x768 @60Hz	64.000 MAC	N	48.780	1312	1024	N	60.001	813	768
1024x768 @70Hz	75.000 VESA	N	56.476	1328	1024	N	70.070	806	768
1024x768 @75Hz	80.000 MAC	N	60.241	1328	1024	N	74.927	804	768
1024x768 @75Hz	78.750 VESA	P	60.023	1312	1024	P	75.030	800	768
1280x768 @60Hz	79,500 VESA	P	47,780	1664	1280	P	59,870	798	768
1280x1024 @60Hz	108.000 VESA	P	63.981	1688	1280	P	60.020	1066	1024
1280x1024 @75Hz	135.000 VESA	P	79.976	1688	1280	P	75.025	1066	1024
1360X768 @60Hz	85.00 VESA	P	47.712	1792	1360	P	60.015	795	768
1600x1200 @60Hz	160.875 VESA	N	74.479	2160	1600	P	59.967	1242	1200
1680x1050 @60Hz	147.000 VESA	N	65.160	2256	1680	P	59.944	1087	1050
1920x1080 @60Hz	172.750 VESA	N	67.061	2576	1920	P	59.983	1118	1080
1920X1200@60Hz	193.125 VESA	N	74.508	1292	1920	P	59,990	1242	1200
2560X1440@60Hz		N	88.7		2560				1440
2560X1600@60Hz		N	98.7		2560				1600

6. OSD Board Menu Tree

The On Screen Display consists of following menu.
These can be activated by selection from Remote Controller or OSD Key pad manually.

6.1 Summarized Table

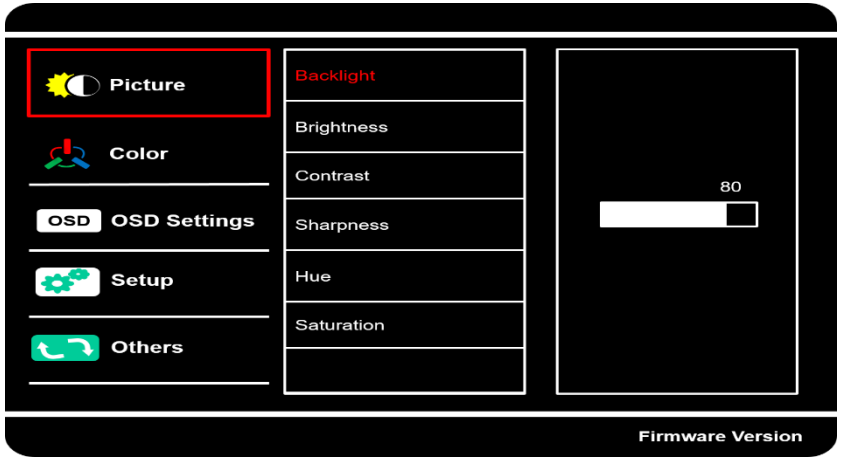
Main Menu	Sub Menu	Control	
Picture	Backlight	0 ~ 100	
	Brightness	0 ~ 100	
	Contrast	0 ~ 100	
	Sharpness	0 ~ 4	
	Hue	0 ~ 100	
	Saturation	0 ~ 100	
Color	Color Temp	9300K, 7500K, 6500K, 5800K, SRGB, User Define	
	Red	0 ~ 100	
	Green	0 ~ 100	
	Blue	0 ~ 100	
	Color Effect	Standard, Game, Movie, Photo, Vivid	
	Gamma	Off, 1.8, 2.0, 2.2, 2.4	
OSD Settings	Language	English, Español, Français, Deutsch, Italiano, Nederlands, Русский	
	Horizontal	0 ~ 100	
	Vertical	0 ~ 100	
	Transparency	0 ~ 100	
	OSD Time Out	0 ~ 100	
	OSD Rotate	0, 90, 270, 180	
Setup	Input	Auto Select, VGA, DP, HDMI, DVI	
	Mute	Off, On	
	Volume	0 ~ 100	
	DP Format	DP 1.1, DP 1.2	
	DP MST	Off, DP1,DP2	
	Clone Mode	Off, On	
	Reset		
Others	Display Size	Full Screen, AUTO, 4:3, 5:4, 1:1	
	Overdrive	Off, On	
	Video Wall Settings	Video Wall	Off, On
		Display Number	1 ~ 25
		Horizontal Number	1 ~ 5
		Vertical Number	1 ~ 5
		RS232 ID	1 ~ 25
	*Light Sensor	Off, On	
	*Fan Controls	Fan Status	Off, On, Auto
		Fan PWM1	0 ~ 100
		Fan PWM2	0 ~ 100
		Fan PWM3	0 ~ 100
		Fan PWM4	0 ~ 100

		ShutDown	Off, On
		ShutDown Temp	60 ~ 85
		Temperature	Temp1 ~ Temp5
	*Self Check	Off, On	
Service	Backlight >> PWM RES	8Bit>>256, 12Bit>>4095	
	>> Control	Liner, Curve	
	>> Invert	Off, On	
	>> Frequency	120 ~ 50000	

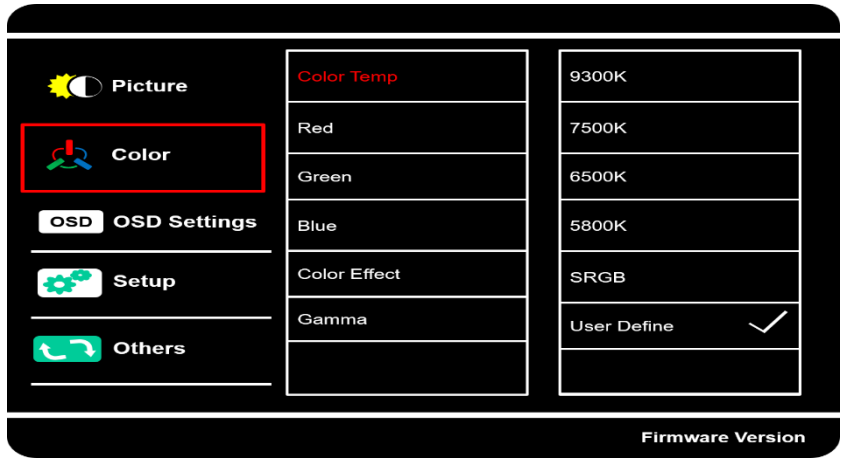
[Note] the " * " is an **Option Sub Menu**

6.2 UI Design shape by the orders of Menu Tree

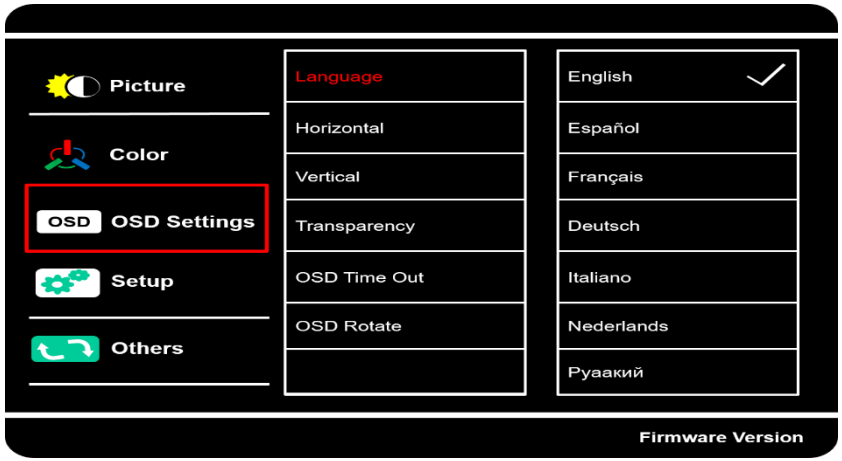
Main menu – 1 : Picture



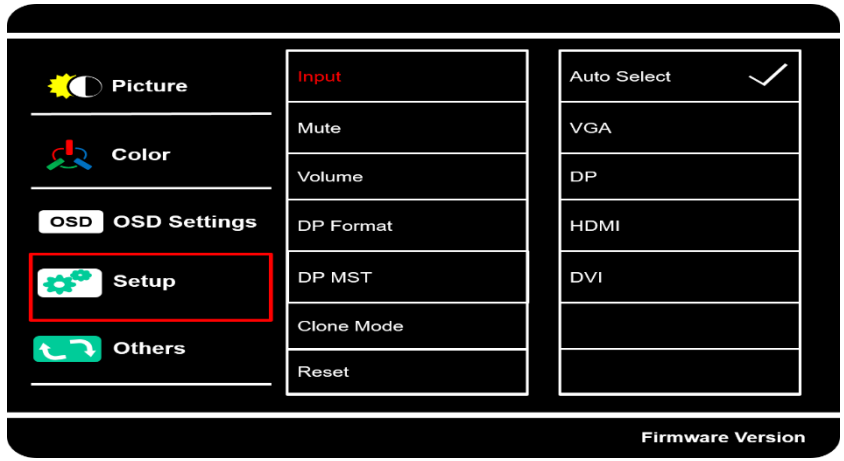
Main menu – 2 : Color



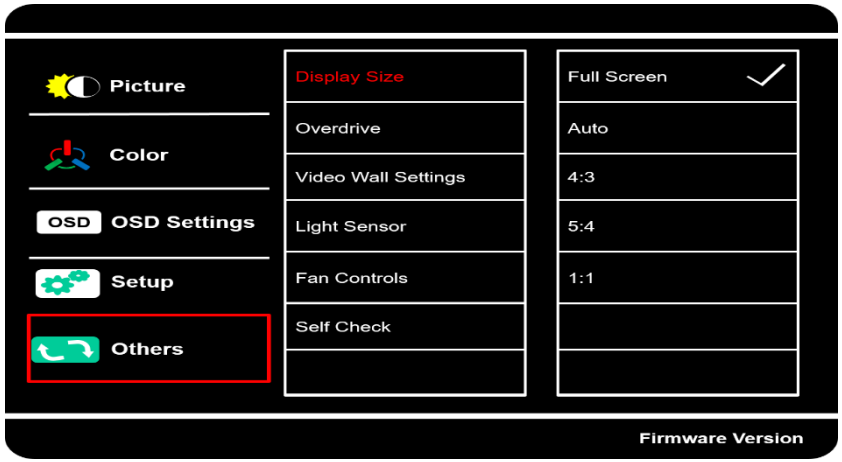
Main menu – 3 : OSD Settings



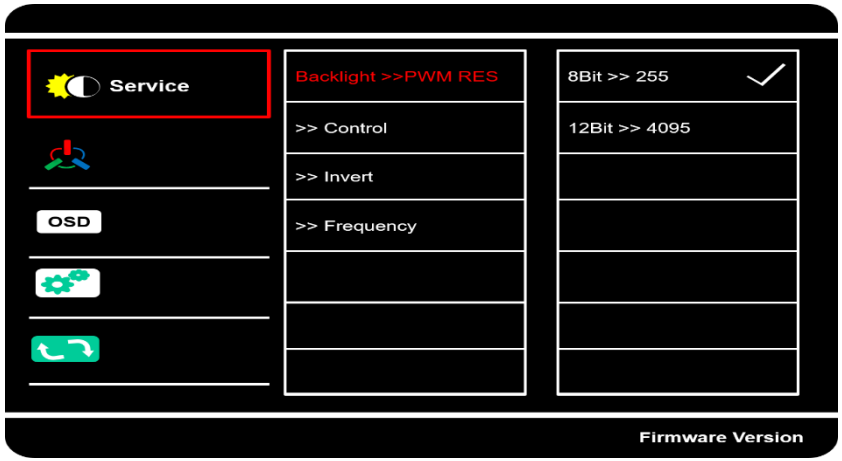
Main menu – 4 : Setup



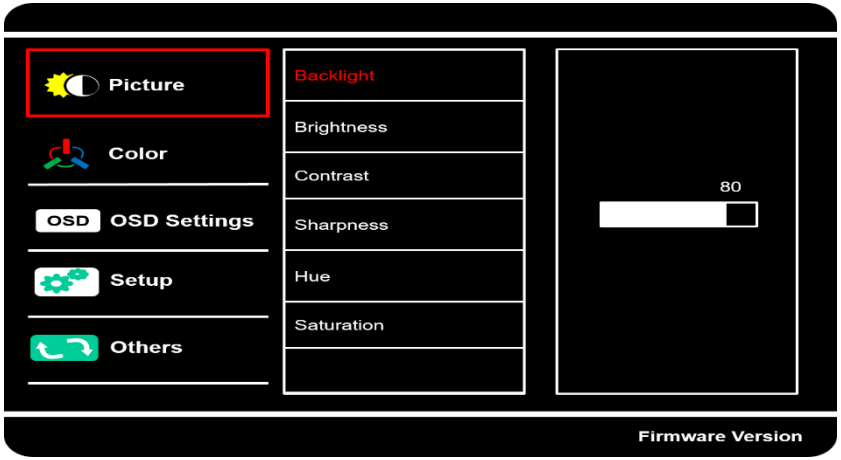
Main menu – 5 : Others



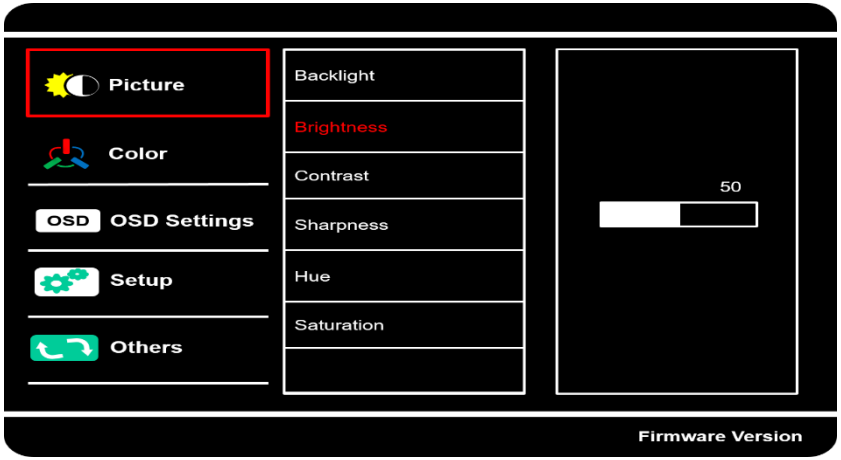
Service menu – : Service



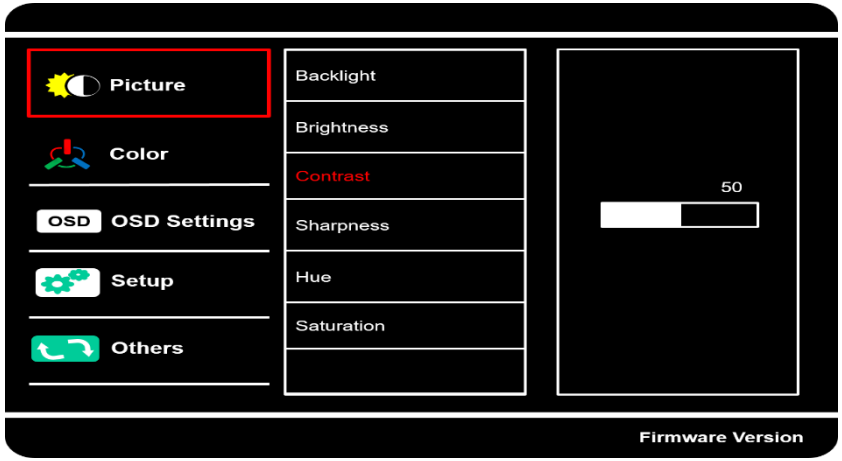
Submenu – 1-1 : Picture – Backlight



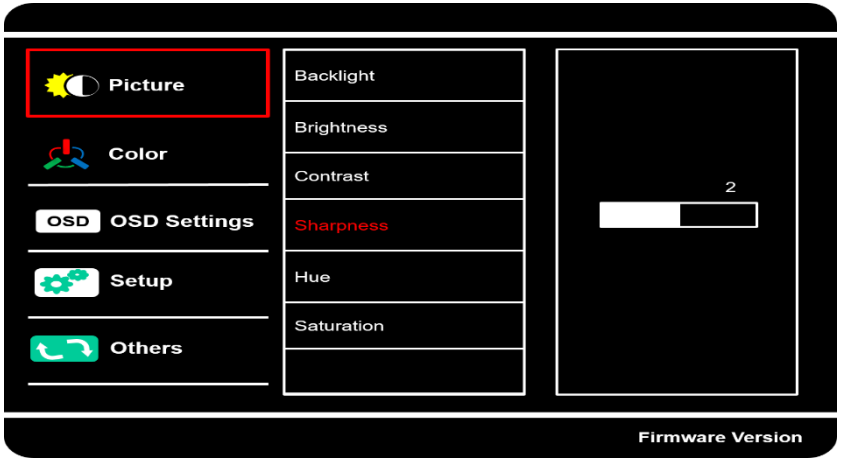
Submenu – 1-2 : Picture – Brightness



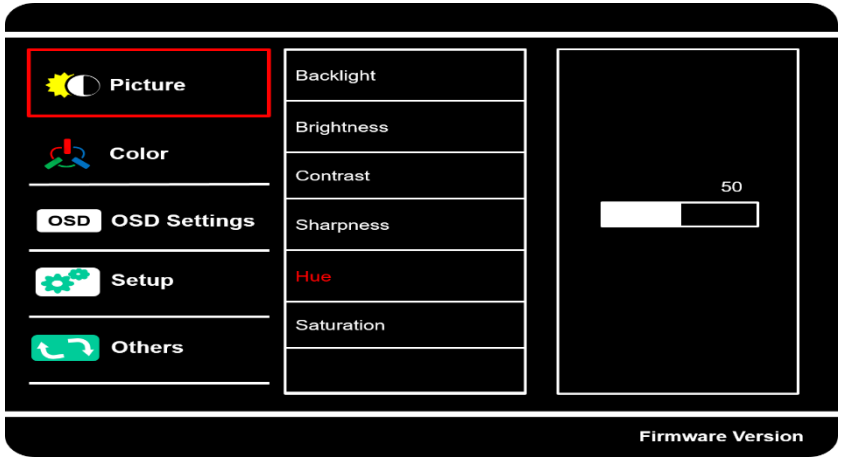
Submenu – 1-3 : Picture – Contrast



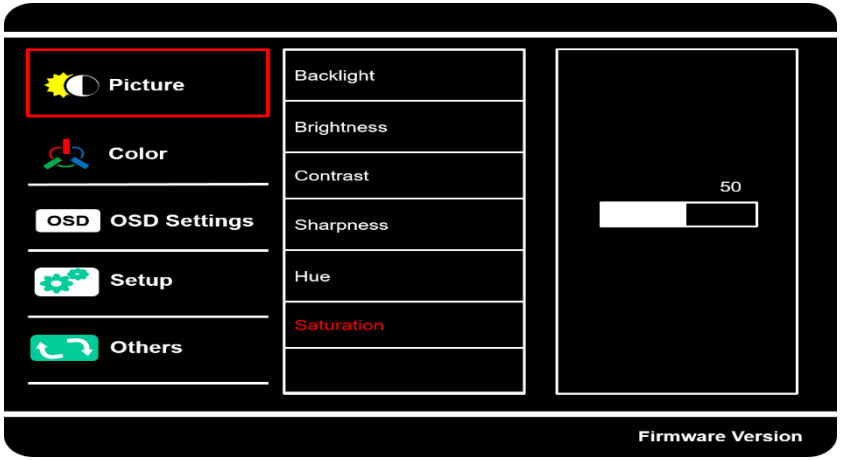
Submenu – 1-4 : Picture – Sharpness



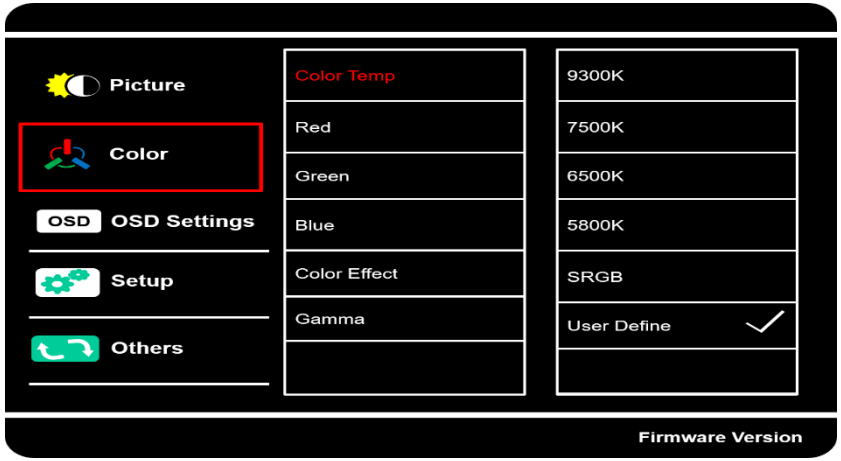
Submenu – 1-5 : Picture – Hue



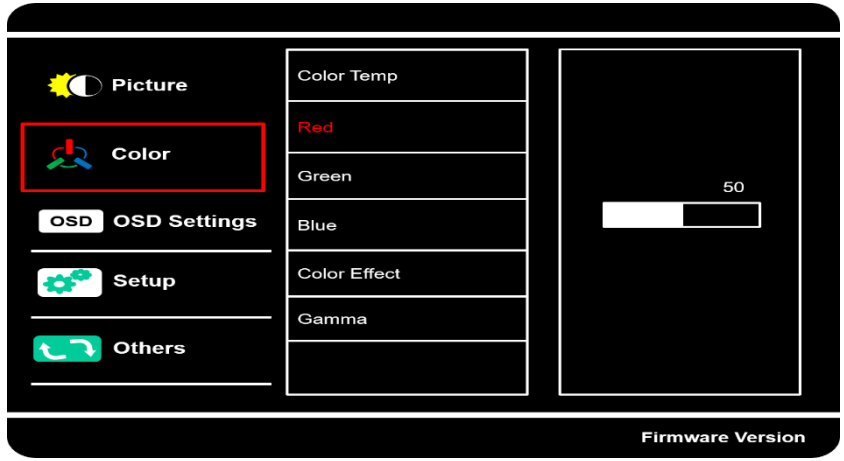
Submenu – 1-6 : Picture – Saturation



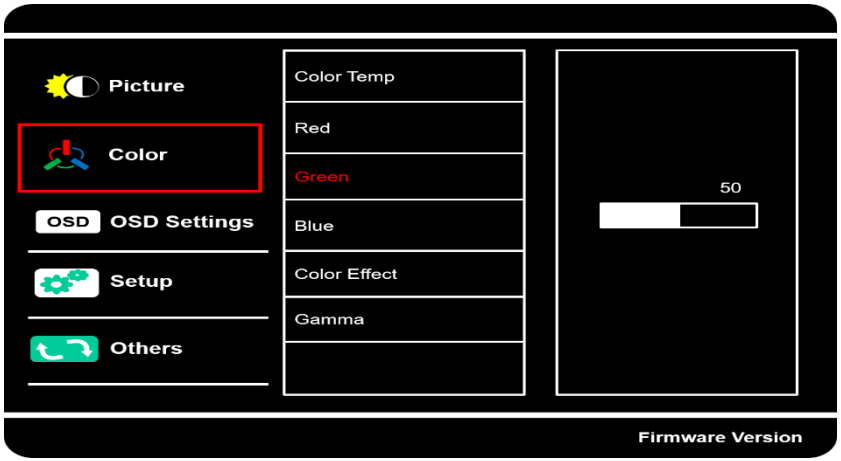
Submenu – 2-1 : Color – Color Temp



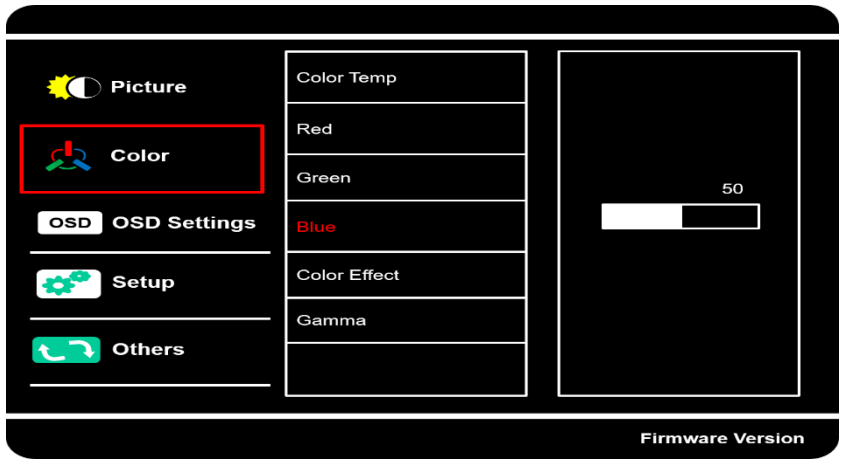
Submenu – 2-2 : Color – Red



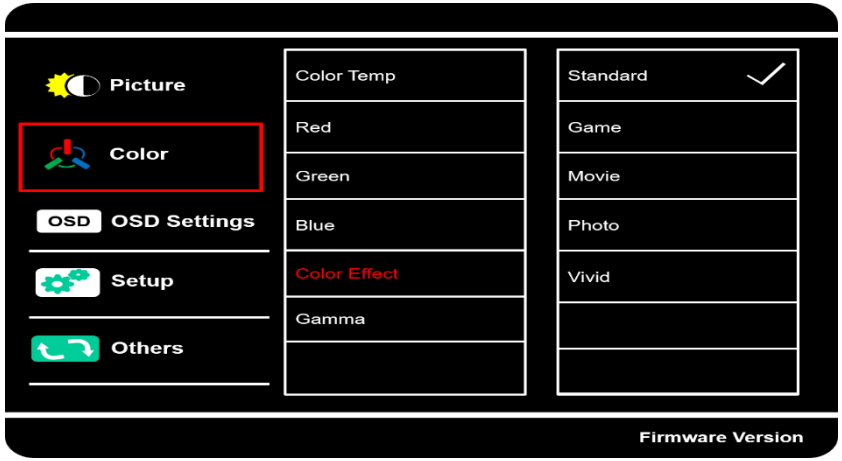
Submenu – 2-3 : Color – Green



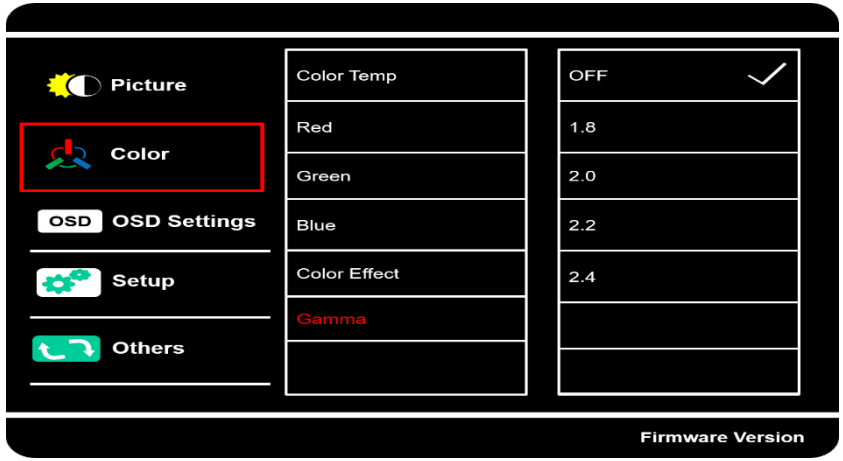
Submenu – 2-4 : Color – Blue



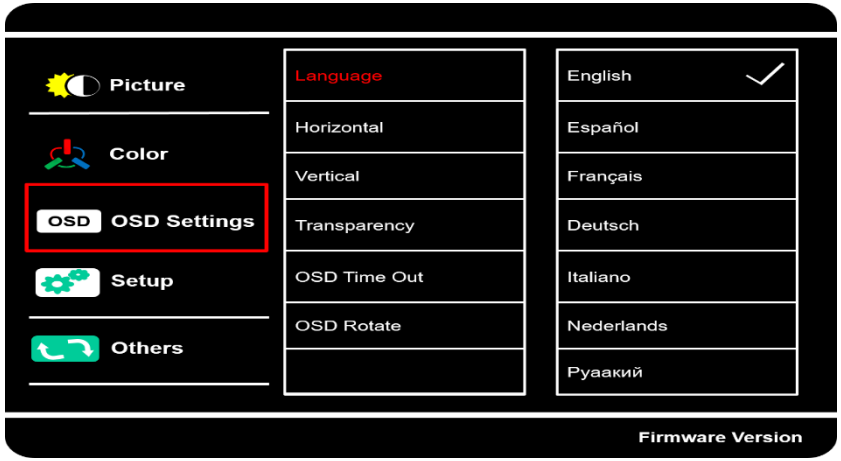
Submenu – 2-5 : Color – Color Effect



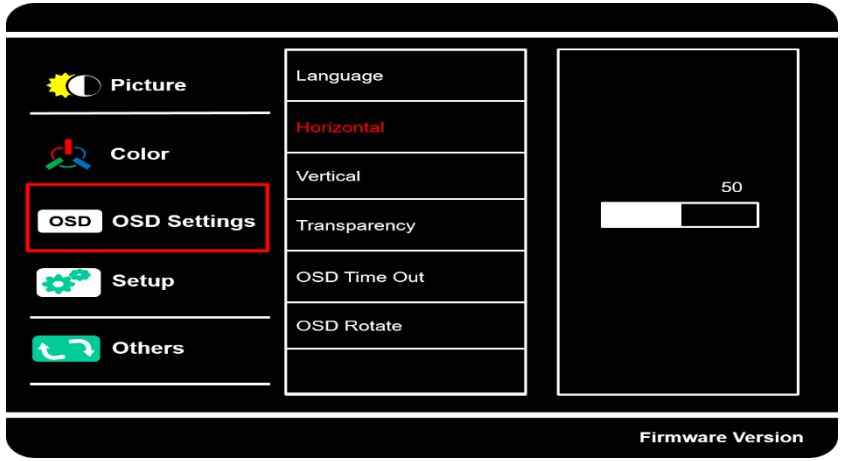
Submenu – 2-6 : Color – Gamma



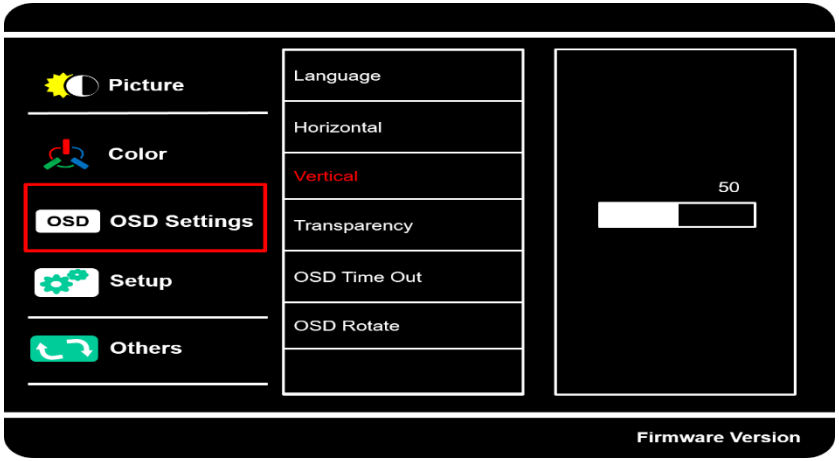
Submenu – 3-1 : OSD Settings – Language



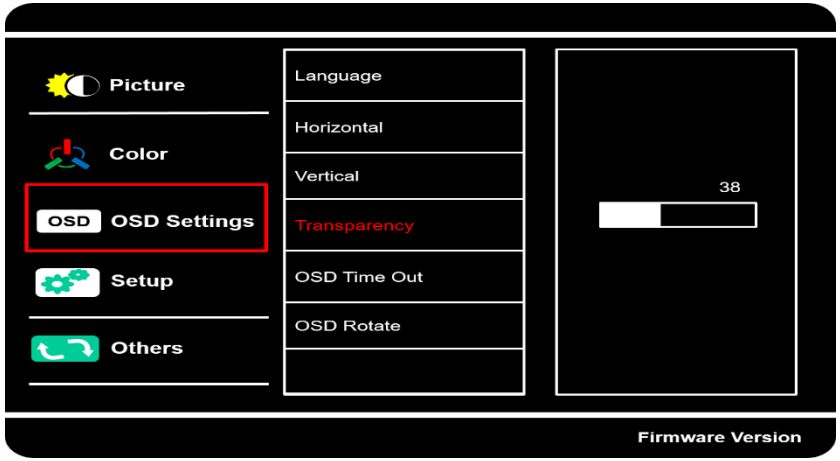
Submenu – 3-2 : OSD Settings – Horizontal



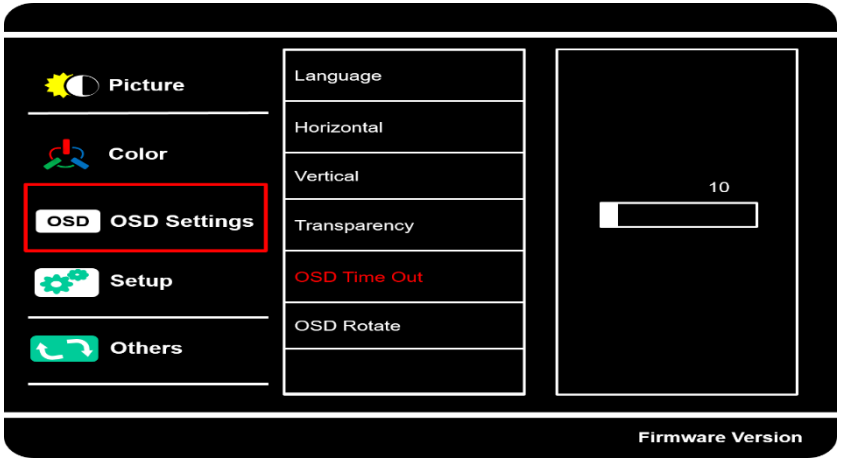
Submenu – 3-3 : OSD Settings – Vertical



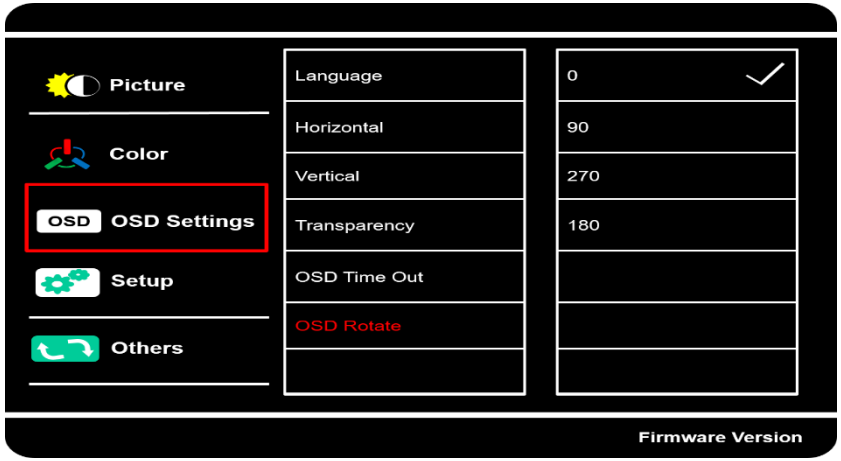
Submenu – 3-4 : OSD Settings – Transparency



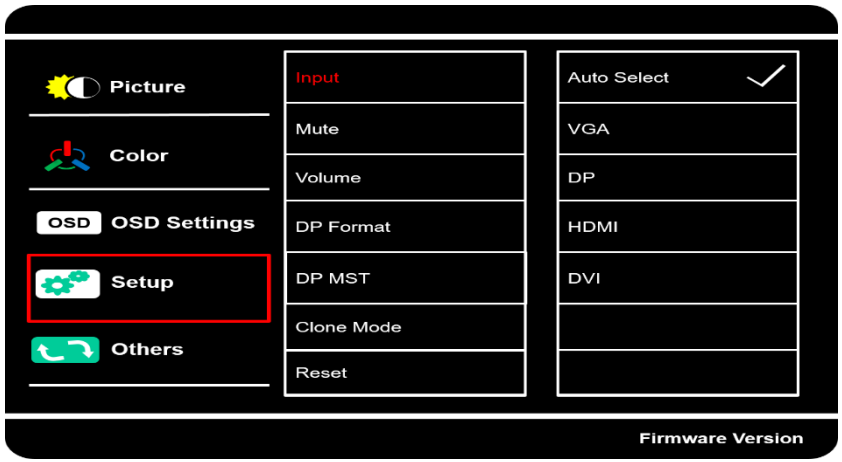
Submenu – 3-5 : OSD Settings – OSD Time Out



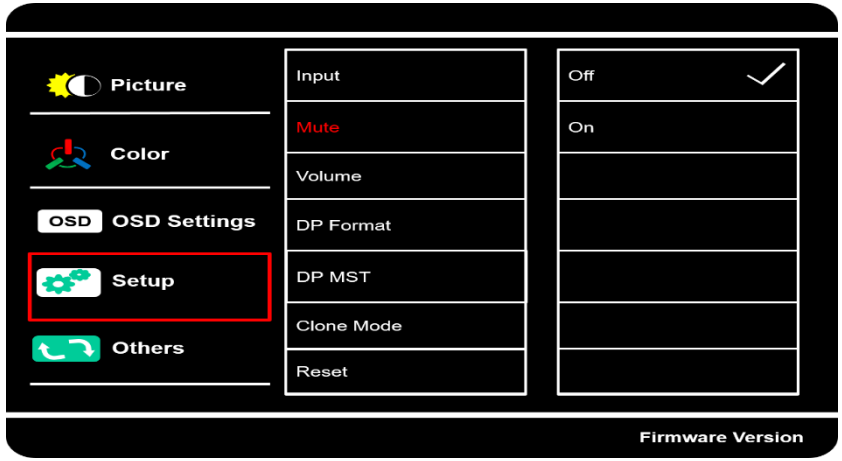
Submenu – 3-6 : OSD Settings – OSD Rotate



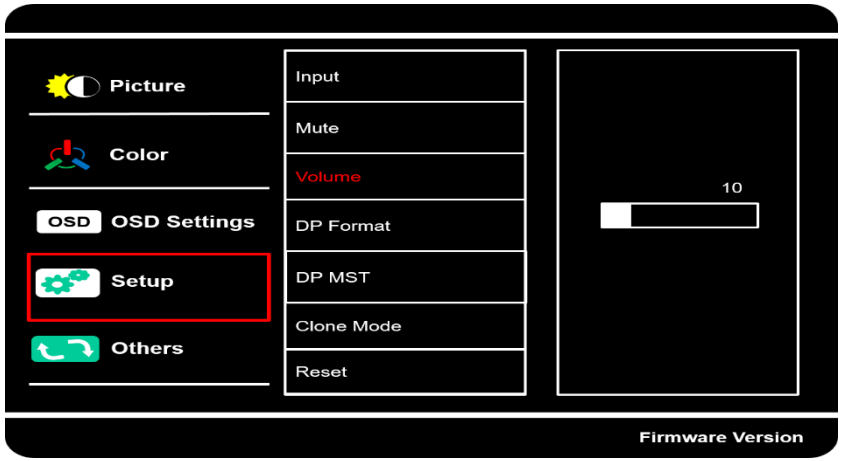
Submenu – 4-1 : Setup – Input



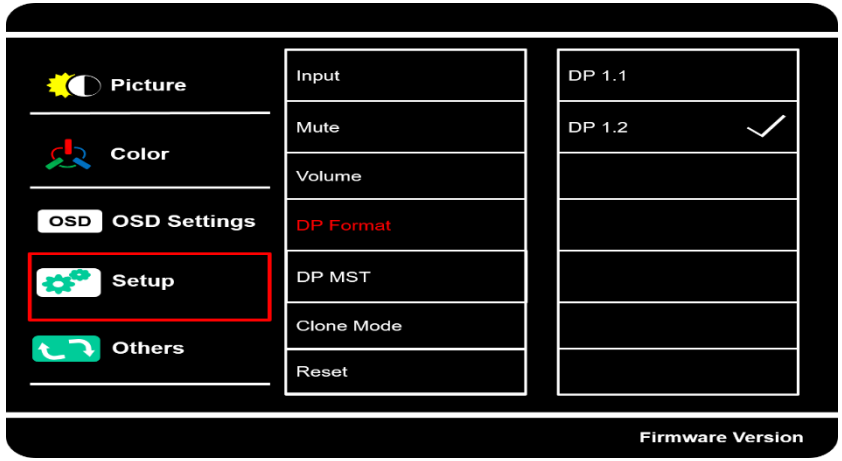
Submenu – 4-2 : Setup – Mute



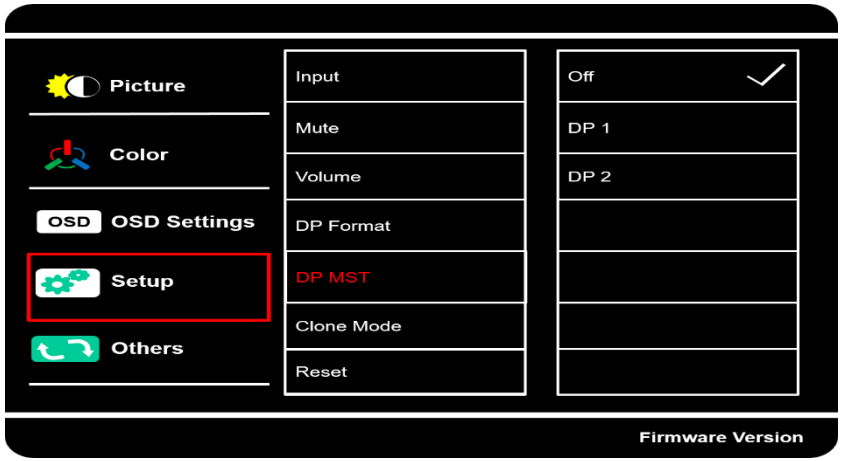
Submenu – 4-3 : Setup – Volume



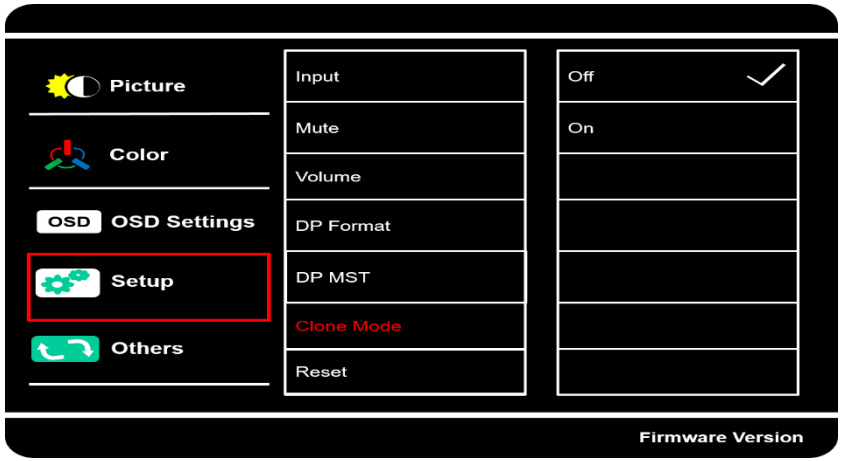
Submenu – 4-4 : Setup – DP Format



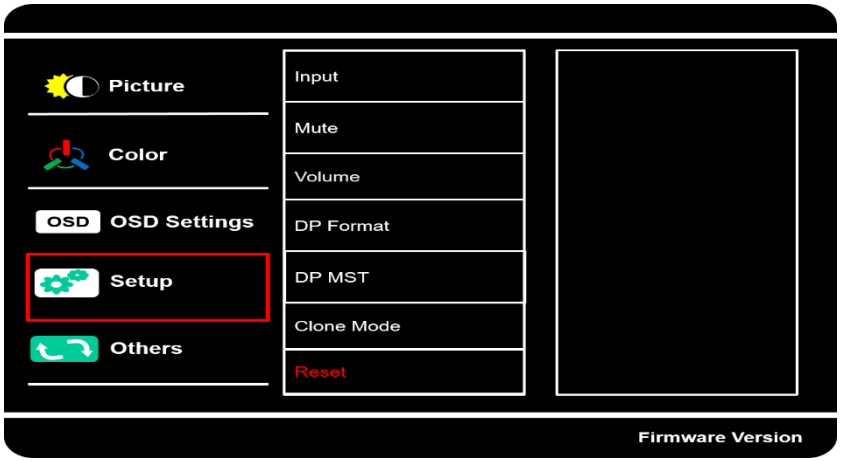
Submenu – 4-5 : Setup – DP MST



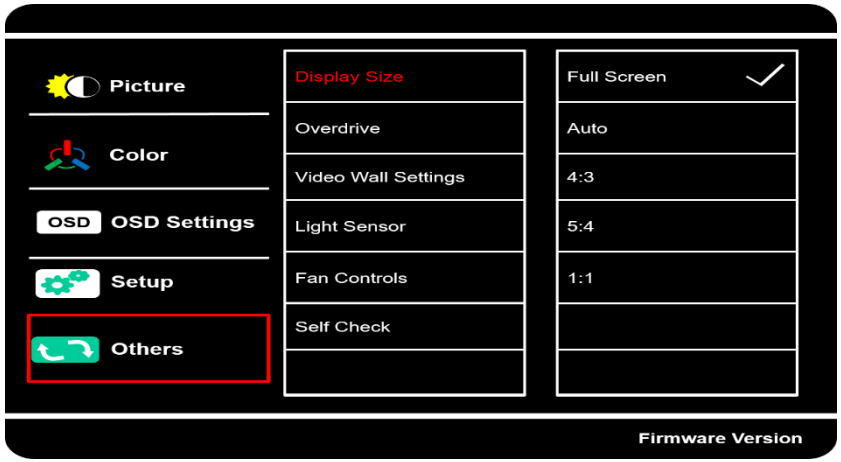
Submenu – 4-6 : Setup – Clone Mode



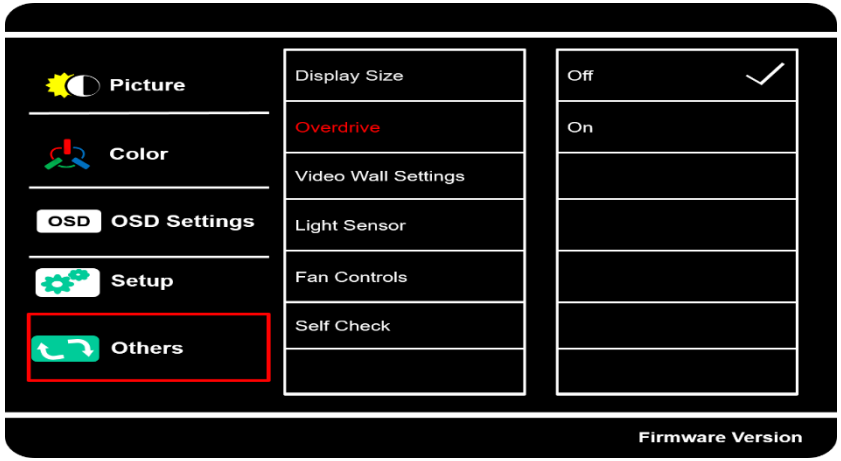
Submenu – 4-7 : Setup – Reset



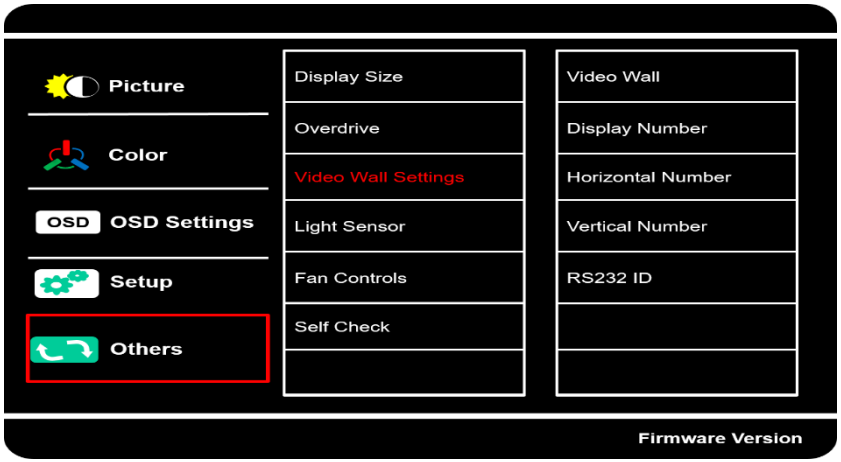
Submenu – 5-1 : Others – Display Size



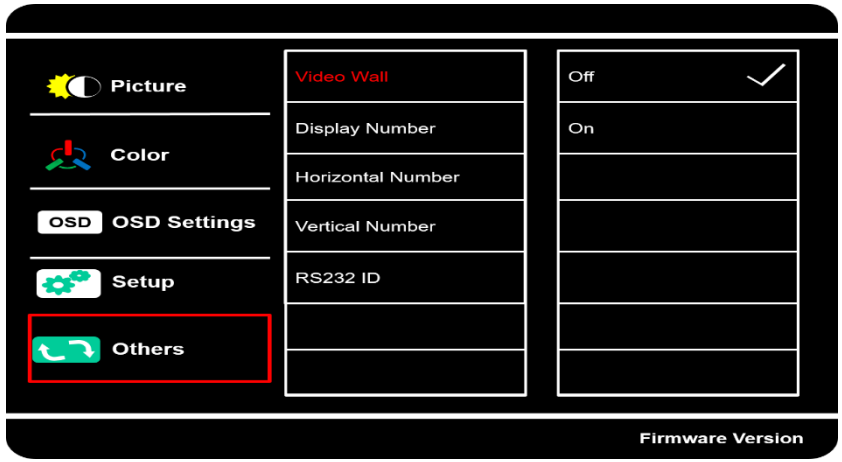
Submenu – 5-2 : Others – Overdrive



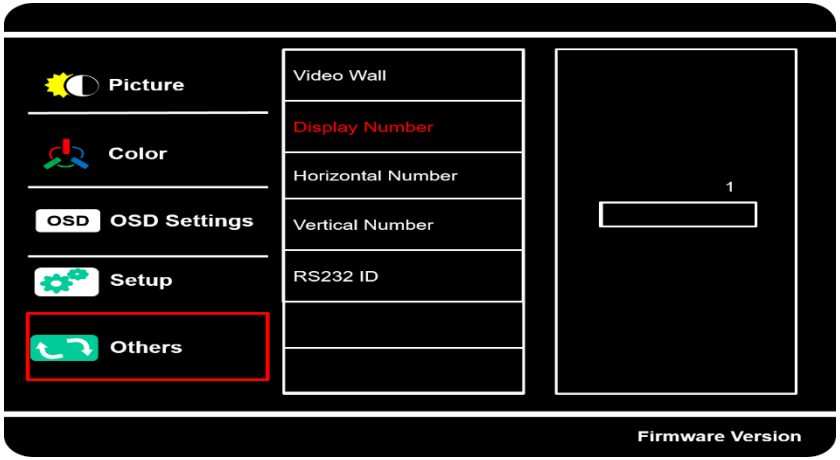
Submenu – 5-3 : Others – Video Wall Settings



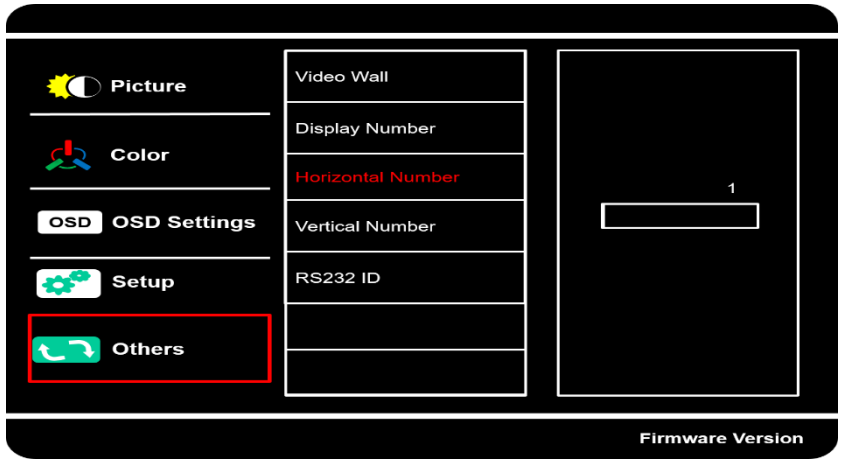
Submenu – 5-3-1 : Others – Video Wall Settings – Video Wall



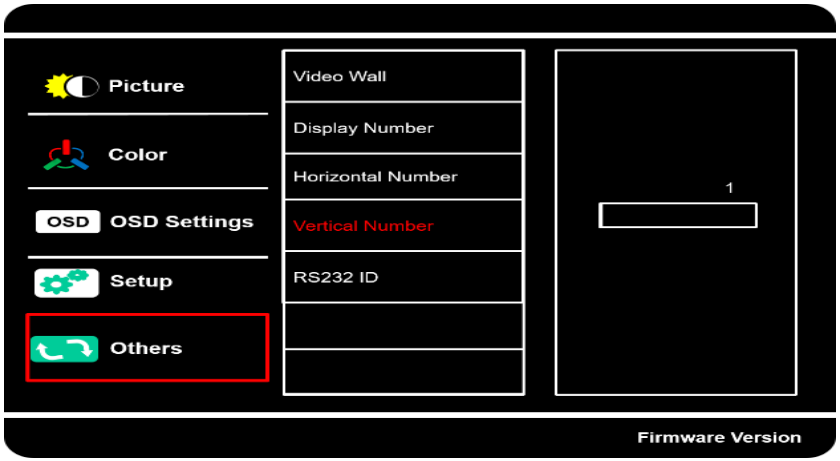
Submenu – 5-3-2 : Others – Video Wall Settings – Display Number



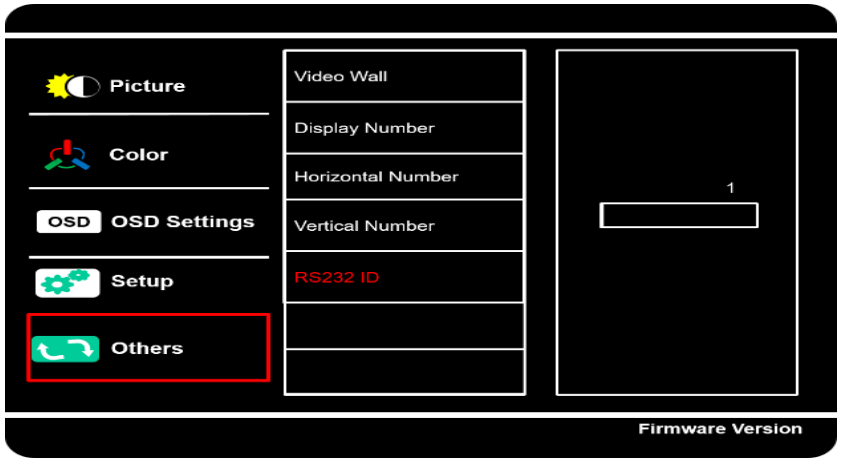
Submenu – 5-3-3 : Others – Video Wall Settings – Horizontal Number



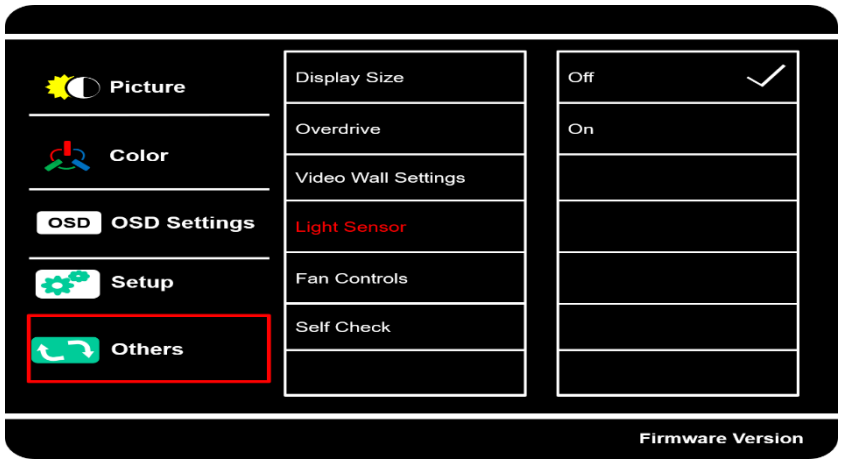
submenu – 5-3-4 : Others – Video Wall Settings – Vertical Number



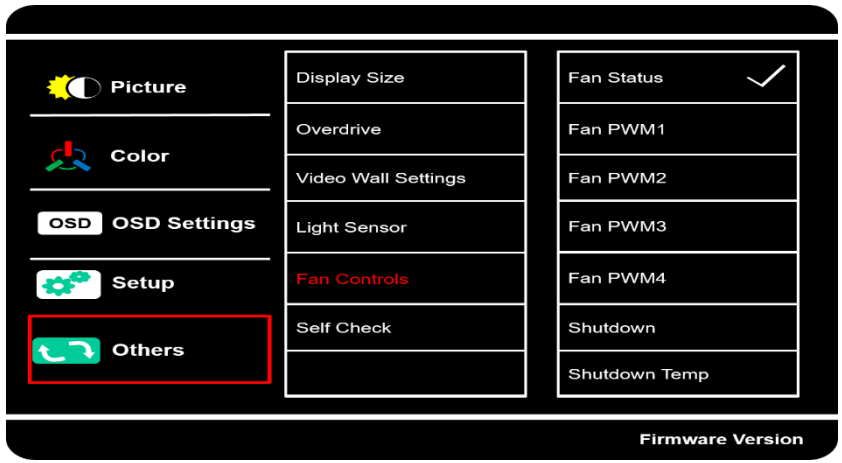
Submenu – 5-3-5 : Others – Video Wall Settings – RS232 ID



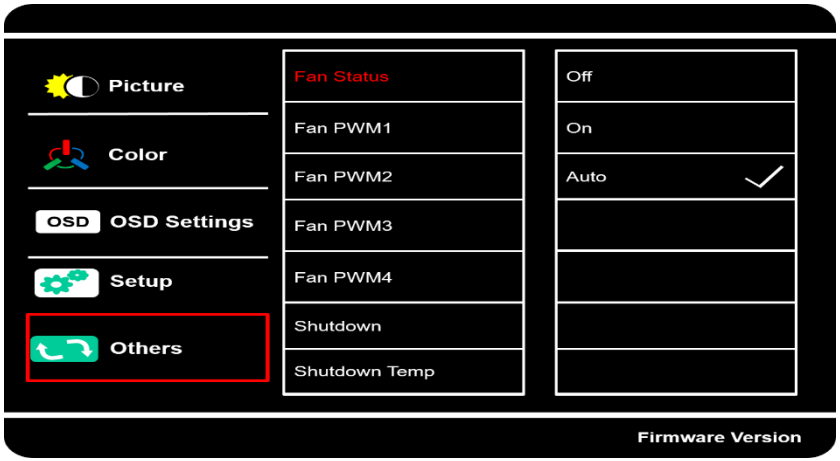
Submenu – 5-4 : Others – Light Sensor



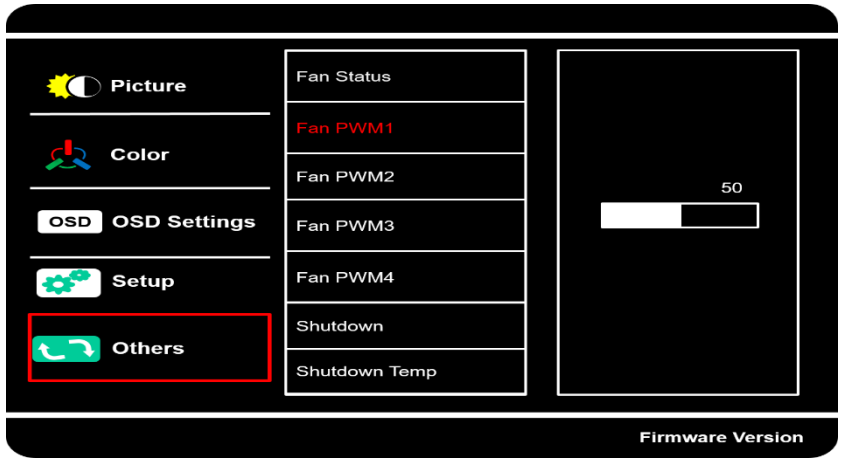
Submenu – 5-5 : Others – Fan Controls



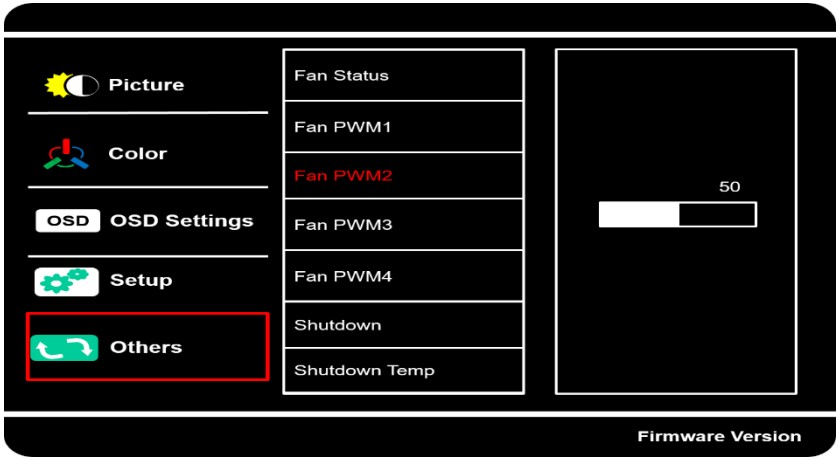
Submenu – 5-5-1 : Others – Fan Controls – Fan Status



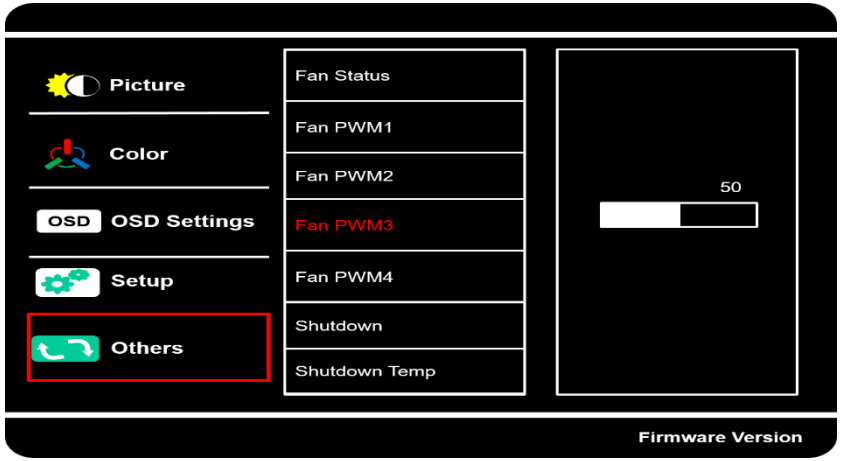
Submenu – 5-5-2 : Others – Fan Controls – Fan PWM1



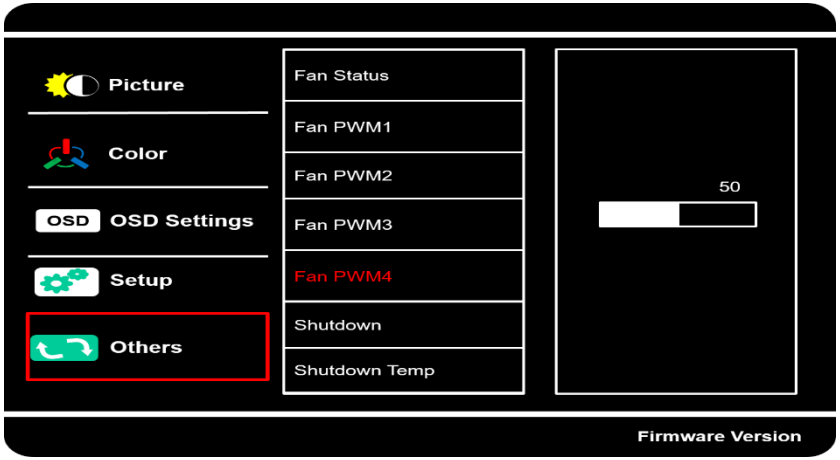
Submenu – 5-5-3 : Others – Fan Controls – Fan PWM2



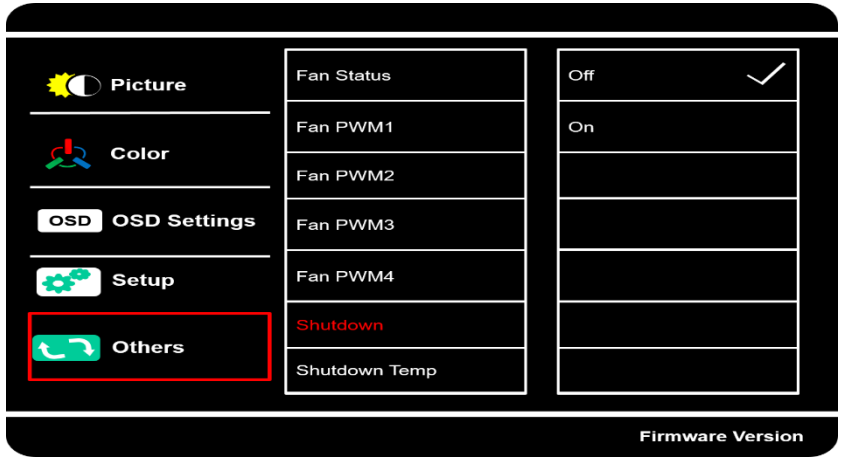
Submenu – 5-5-4 : Others – Fan Controls – Fan PWM3



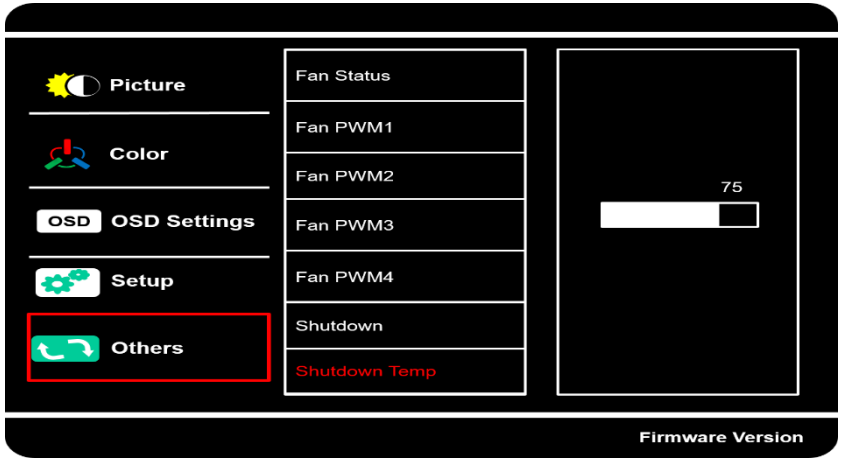
Submenu – 5-5-5 : Others – Fan Controls – Fan PWM4



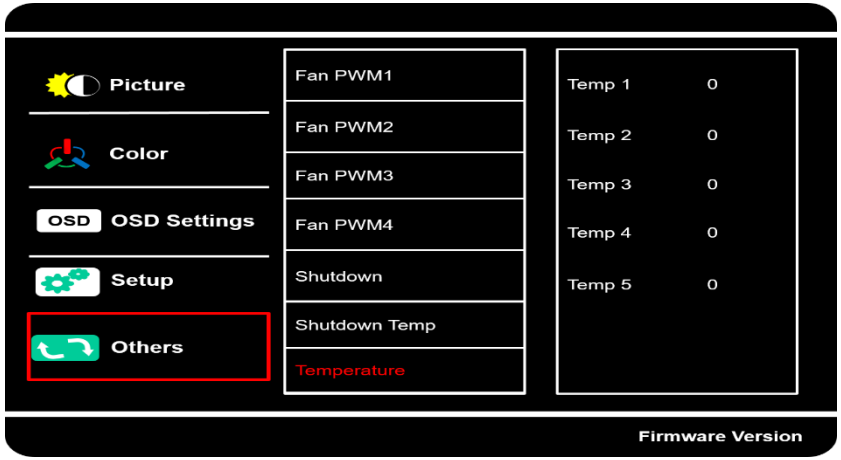
Submenu – 5-5-6 : Others – Fan Controls – Shutdown



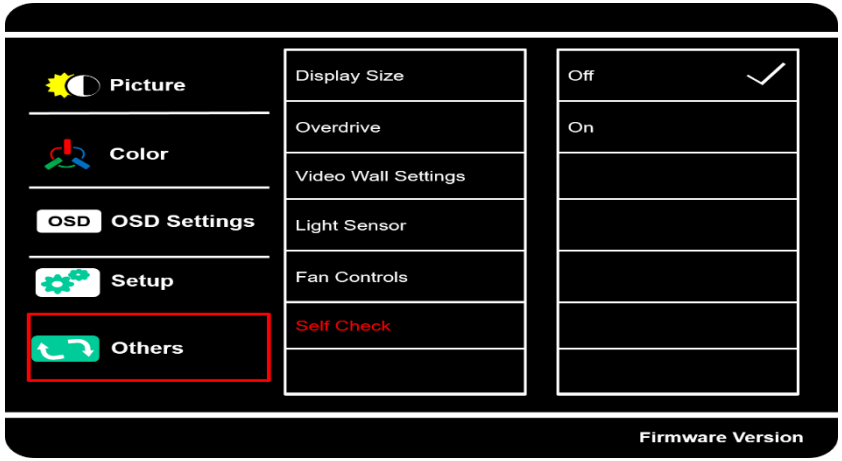
Submenu – 5-5-7 : Others – Fan Controls – Shutdown Temp



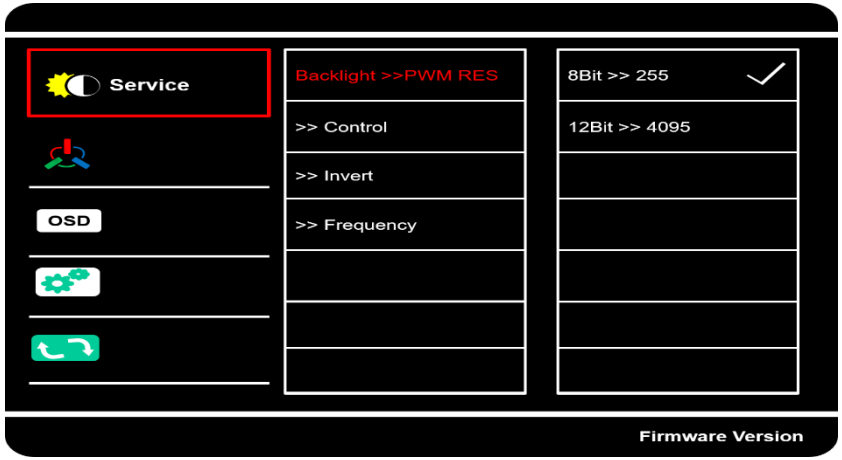
Submenu – 5-5-8 : Others – Fan Controls – Temperature



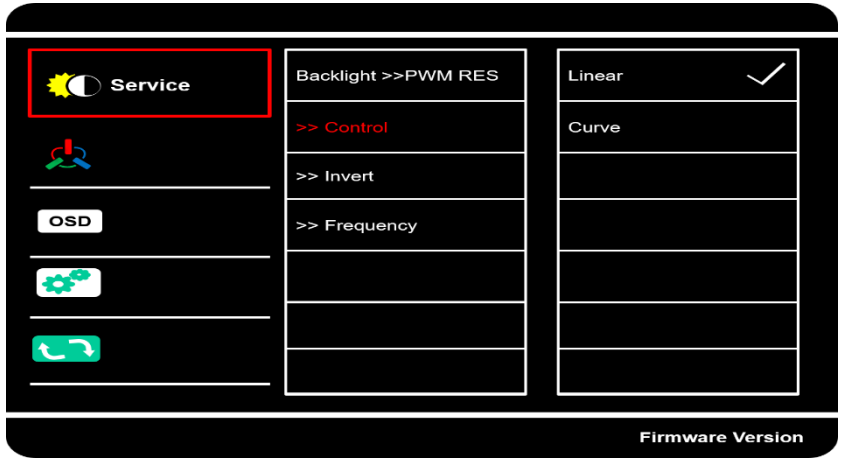
Submenu – 5-6 : Others – Self Check



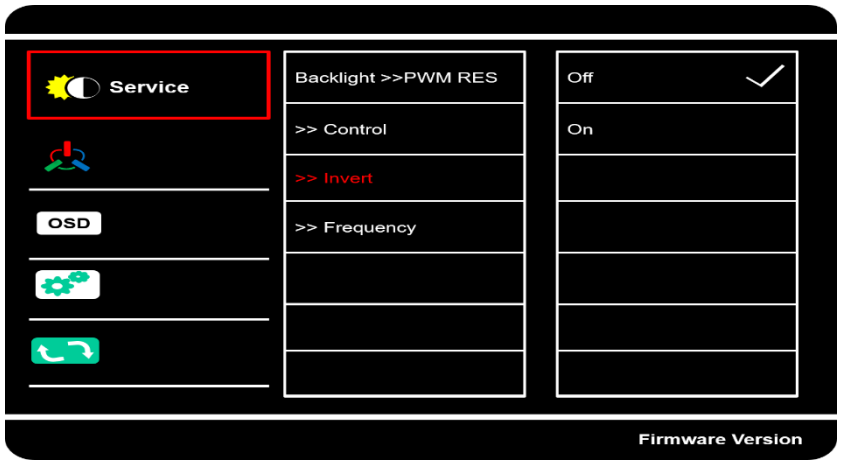
Service Menu – 1 : Backlight PWM Resolution



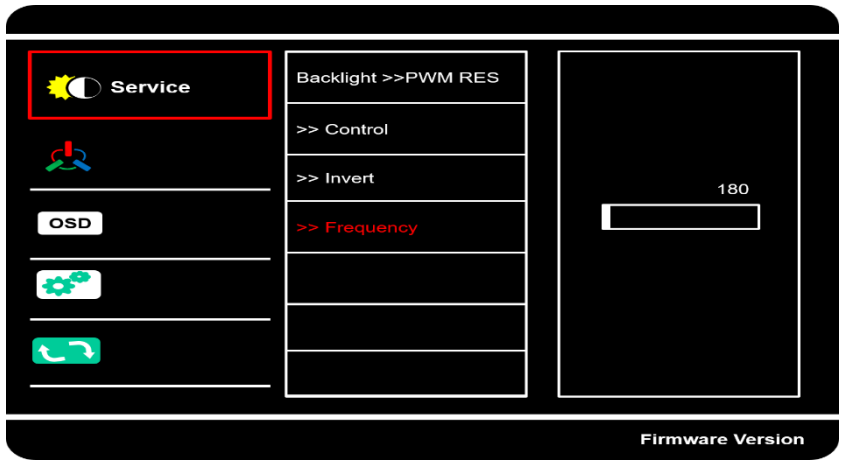
Service Menu – 2 : Backlight Control



Service Menu – 3 : Backlight PWM Invert



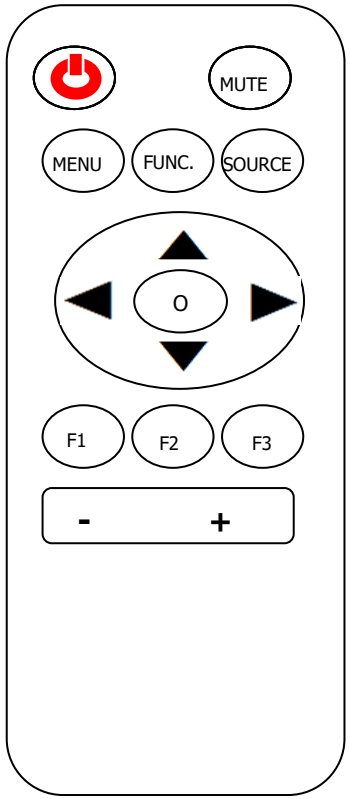
Service Menu – 4 : Backlight PWM Frequency



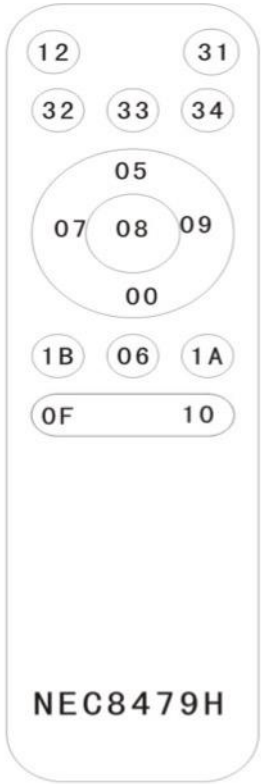
7. Remote Controller

Distance at 7 meters max and 30 degree (left/right) max

- Part Number : VRC1340
- Format : NEC
- Custom code : 8479 (Hex)



Data Code (Hex)



8. RS232 Communication

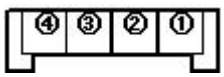
8.1 Communication Parameters

- Baud rate **:**9600 bps
- Data length : 8 bits
- Parity bit : None
- Stop bit : 1 bit
- Communication : ASCII CODE

8.2 Physical connection :

Controller side:
Connector interface: CN11
Mating connector: DB9 Female or
20010HS-04, Yeon-Ho

PIN#	Description
1	Ground
2	RS-232 Tx Data
3	RS-232 Rx Data
4	Power 5V



Computer side:
Connector interface: Serial port
Mating connector: DB9 Male

PIN#	Description
2	RS-232 Rx Data
3	RS-232 Tx Data
5	Ground

8.3 RS-232 Serial Protocols

Video Wall Disable (Normal)

Tx Format : [Command1] [Command2] [Space] [0] [0] [Space] [DataH] [DataL] [CR]
; ASCII : [Space] = 0x20 , [CR] = 0x0D, [0] = 0x30, [a] = 0x61, [A] = 0x41
Rx OK Format : [Command2] [Space] [0] [0] [Space] [O] [K] [DataH] [DataL] [x] [CR]
; OK

Rx NG1 Format : [Command2] [Space] [0] [0] [Space] [N] [G] [0] [1] [x] [CR]
; NG01 : illegal command
Rx NG2 Format : [Command2] [Space] [0] [0] [Space] [N] [G] [0] [2] [x] [CR]
; NG02 : unknown command /data

Video Wall Enable

Tx Format : [Command1] [Command2] [Space] [0] [0] [Space] [DataH] [DataL] [Space] **[RS232 ID H] [RS232 ID L]** [CR]
; ASCII : [Space] = 0x20 , [CR] = 0x0D, [0] = 0x30, [a] = 0x61, [A] = 0x41
Rx OK Format : [Command2] [Space] [0] [0] [Space] [O] [K] [DataH] [DataL] [Space] **[RS232 ID H] [RS232 ID L]** [x] [CR]
; OK

Rx NG1 Format : [Command2] [Space] [0] [0] [Space] [N] [G] [0] [1] [Space] **[RS232 ID H] [RS232 ID L]** [x] [CR]
; NG01 : illegal command
Rx NG2 Format : [Command2] [Space] [0] [0] [Space] [N] [G] [0] [2] [Space] **[RS232 ID H] [RS232 ID L]** [x] [CR]
; NG02 : unknown command /data

Serial Command and Protocol

Command Set	Command	Acknowledgement	Comments
Power (ka)			
Power On	ka 00 01(CR)	a 00 OK01x	01
Power Off	ka 00 00(CR)	a 00 OK00x	00
Power Status	ka 00 ff(CR)	a 00 OK01x (On) a 00 OK00x (Off)	read
P1 Input selection (k1)			
P1	k1 00 01(CR) k1 00 02(CR) k1 00 03(CR) k1 00 04(CR) k1 00 05(CR)	1 00 OK01x (AUTO) 1 00 OK02x (VGA) 1 00 OK03x (DP) 1 00 OK04x (HDMI) 1 00 OK05x (DVI)	01 : AUTO (AUTO) 02 : VGA (VGA) 03 : DP (DP) 04 : HDMI (HDMI) 05 : DVI (DVI)
Status	k1 00 ff(CR)	1 00 OK01x (AUTO) 1 00 OK02x (VGA) 1 00 OK03x (DP) 1 00 OK04x (HDMI) 1 00 OK05x (DVI)	read
Screen Mute (kd)			
Screen Mute ON (Picture off)	kd 00 01(CR)	d 00 OK01x (Mute ON)	01
Screen Mute OFF (Picture on)	kd 00 00(CR)	d 00 OK00x (Mute OFF)	00
Status	kd 00 ff(CR)	d 00 OK01x (Mute ON) d 00 OK00x (Mute OFF)	read
Audio Mute (ke)			
Audio Mute	ke 00 01(CR) ke 00 00(CR)	e 00 OK01x (Mute ON) e 00 OK00x (Mute OFF)	01 : Mute ON 00 : Mute OFF
Status	ke 00 ff(CR)	e 00 OK01x (Mute ON) e 00 OK00x (Mute OFF)	read
Audio Volume (kf)			
Volume control	kf 00 00(CR)	f 00 OK00x (Volume = 0, Min.)	00 (Hex , Decimal)
(0~100%) (Default = 20%)	kf 00 1A(CR)	f 00 OK1Ax (Volume = 26)	1A (1Ah = 26)
00h ~ 64h (Default = 32h)	kf 00 32(CR)	f 00 OK32x (Volume = 50)	32 (32h = 50)
	kf 00 64(CR)	f 00 OK64x (Volume = 100, Max.)	64 (64h = 100)
Status	kf 00 ff(CR)	f 00 OK2Fx (Volume = 47)	read
Aspect Ratio (kg)			
Aspect Ratio	kg 00 00(CR) kg 00 01(CR) kg 00 02(CR) kg 00 03(CR) kg 00 04(CR)	g 00 OK00x (Full) g 00 OK01x (16:9) g 00 OK02x (4:3) g 00 OK03x (5:4) g 00 OK04x (1:1)	00 : Full 01 : 16:9 02 : 4:3 03 : 5:4 04 : 1:1
Status	kg 00 ff(CR)	g 00 OK00x (Full)	read

		g 00 OK01x (16:9) g 00 OK02x (4:3) g 00 OK03x (5:4) g 00 OK04x (1:1)	
BackLight (kh)			
0 ~ 100% (Default = 80%)	kh 00 50(CR)	h 00 OK50x (BackLight = 80)	00h ~ 64h (Default = 50h)
Status	kh 00 ff(CR)	h 00 OK50x (BackLight = 80)	read
Contrast (ki)			
0 ~ 100% (Default = 50%)	ki 00 32(CR)	i 00 OK32x (Contrast = 50)	00h ~ 64h (Default = 32h)
Status	ki 00 ff(CR)	i 00 OK32x (Contrast = 50)	read
Brightness (kj)			
0 ~ 100% (Default = 50%)	kj 00 32(CR)	j 00 OK32x (Brightness = 50)	00h ~ 64h (Default = 32h)
Status	kj 00 ff(CR)	j 00 OK32x (Brightness = 50)	read
Sharpness (kk)			
0 ~ 4 (Default = 2)	kk 00 02(CR)	k 00 OK02x (Sharpness = 2)	00h ~ 04h (Default = 02h)
Status	kk 00 ff(CR)	k 00 OK02x (Sharpness = 2)	read
Gamma (kl)			
0 ~ 4 (Default = 0 : OFF)	kl 00 00(CR) kl 00 01(CR) kl 00 02(CR) kl 00 03(CR) kl 00 04(CR)	l 00 OK00x(Gamma=Off) l 00 OK01x(Gamma=1.8) l 00 OK02x(Gamma=2.0) l 00 OK03x(Gamma=2.1) l 00 OK04x(Gamma=2.2)	00 : Gamma OFF 01 : Gamma 1.8 02 : Gamma 2.0 03 : Gamma 2.2 04 : Gamma 2.4
Status	kl 00 ff(CR)	l 00 OK00x(Gamma=Off)	read
Temperature (km)			
0 ~ 4 (Default = 2 : 6500)	km 00 00(CR) km 00 01(CR) km 00 02(CR) km 00 03(CR) km 00 04(CR)	m 00 OK00x (Temperature = 9300) m 00 OK01x (Temperature = 7500) m 00 OK02x (Temperature = 6500) m 00 OK03x (Temperature = 5800) m 00 OK04x (Temperature = sRGB)	00 : 9300 01 : 7500 02 : 6500 03 : 5800 04 : sRGB
Status	km 00 ff(CR)	m 00 OK02x (Temperature = 6500)	read
Color Effect (kn)			
0 ~ 4 (Default = 0 : Standard)	kn 00 00(CR) kn 00 01(CR)	n 00 OK00x (Effect = Standard) n 00 OK01x (Effect = Game) n 00 OK02x (Effect = Movie)	00 : Standard 01 : Game

	kn 00 02(CR) kn 00 03(CR) kn 00 04(CR)	n 00 OK03x (Effect = Photo) n 00 OK04x (Effect = Vivid)	02 : Movie 03 : Photo 04 : Vivid
Status	kn 00 ff(CR)	n 00 OK00x (Effect = Standard)	read
DP Format (k5)			
DP Format	k5 00 00(CR) k5 00 01(CR)	5 00 OK00x (DP1.1) 5 00 OK01x (DP1.2)	00 : DP1.1 01 : DP1.2
Status	K5 00 ff(CR)	5 00 OK00x (DP1.1) 5 00 OK01x (DP1.2)	read
DP Format (k6)			
DP MST	k6 00 00(CR) k6 00 01(CR) k6 00 02(CR)	6 00 OK00x (Off) 6 00 OK01x (DP 1) 6 00 OK02x (DP 2)	00 : Off 01 : DP 1 02 : DP 2
Status	k6 00 ff(CR)	6 00 OK00x (Off) 6 00 OK01x (DP 1) 6 00 OK02x (DP 2)	read
DP Format (k7)			
Clone Mode	k7 00 00(CR) k7 00 01(CR)	7 00 OK00x (Off) 7 00 OK01x (On)	00 : Off 01 : On
Status	k7 00 ff(CR)	7 00 OK00x (Off) 7 00 OK01x (On)	read
Local Key (mk)			
POWER KEY	mk 00 00(CR)	k 00 OK00x	00h
MENU KEY	mk 00 01(CR)	k 00 OK01x	01h
LEFT KEY	mk 00 02(CR)	k 00 OK02x	02h
RIGHT KEY	mk 00 03(CR)	k 00 OK03x	03h
DOWN KEY (/ ENTER KEY)	mk 00 04(CR)	k 00 OK04x	04h
UP KEY (/ EXIT KEY)	mk 00 05(CR)	k 00 OK05x	05h
SOURCE KEY	mk 00 06(CR)	k 00 OK06x	06h