

# HI-GM3458

Approval

Rev. 01





Issue Date.

2016. 08. 08

Doc No.

GM3458 BOARD 01

Note | Specification is subject to change without notice.  
Consequently it is better to contact to our company before proceeding with the design of your product incorporating this board

Prepared	Checked I	CheckedII	Approved
			
Samuel. Lee			YH. HAN



## 1. General Specification

No.	Item	Description		
1	Model Name	GM3458		
2	LCD Module	LVDS 1920X1200 60Hz 8bit(OPTION) V by one 3840X2160 60Hz(OPTION)		
3	Input	HDMI 2.0*2(TMDS), DP (HBR2), RF(OPTION)		
4	Resolution Support	H: 31 ~ 135kHz		
		V: 55 ~ 76Hz		
5	OSD Control	Input, Menu, Left, Right, Down, Up, Power		7 keys
	Plug & Play	VESA DDC 2B Ver1.4		
6	Power Consumption	Supply Voltage	12Vdc	
		Power	16.7 Watt (UHD 60Hz dot active)	Board Only
7	Signal Connector	Digital	HDMI 2.0(TMDS), DP(HBR2) / HDCP Ver1.4	
		Audio	3W x 3W	
		RF(OPTION)	ATSC	
8	Board Size	W x H x D(mm)	140 x 100 x 17	



## 2. ELECTRICAL SPECIFICATION

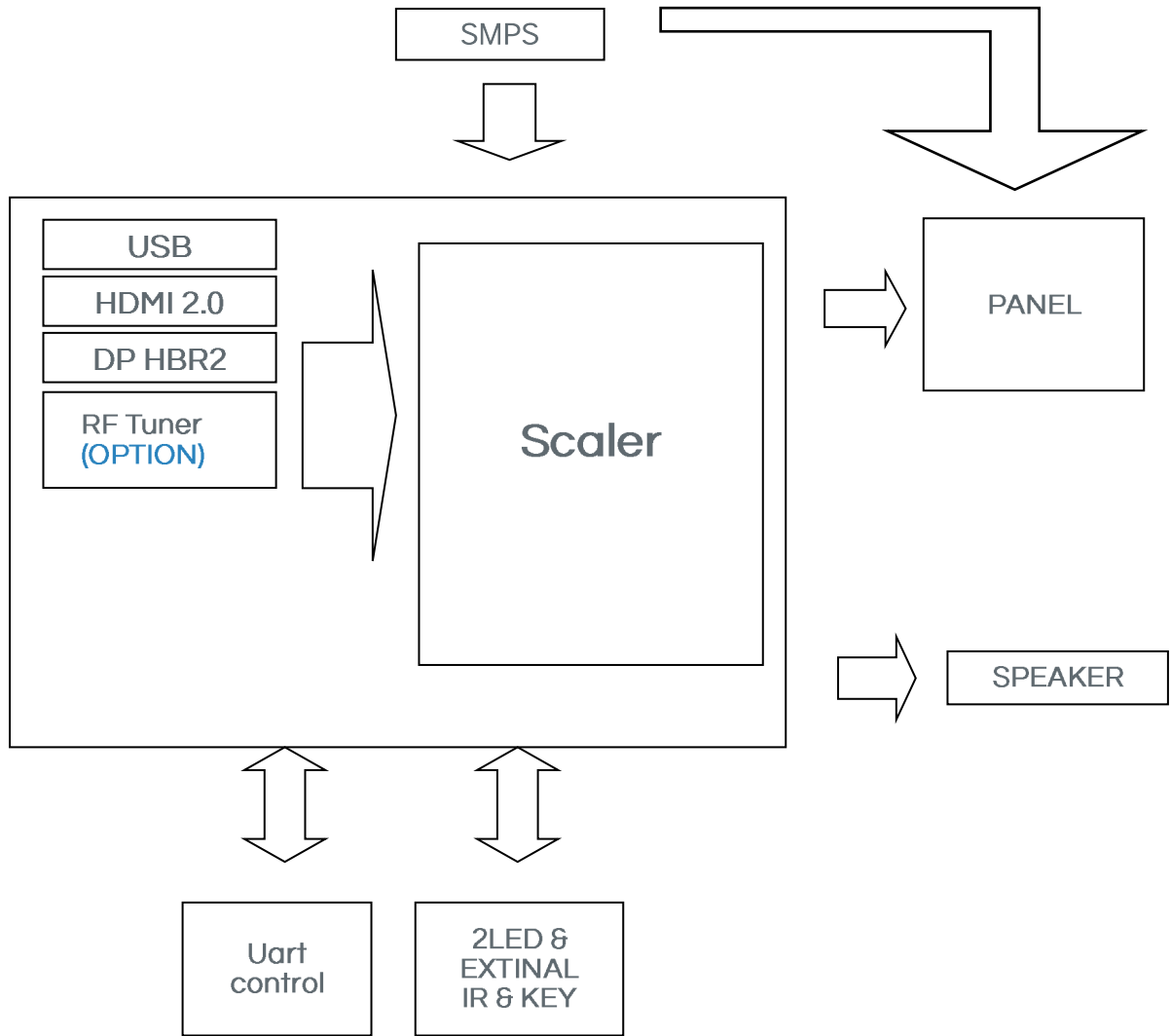
### 2.1. Input characteristic

Description	Signal	Unit	Min	Typical	Max	Remarks
Power In (12Vdc)						
	Input	12VDC	11.4	12	12.6	
	Consumption	Watt		16.7		Board Only
HDMI Input						
	TMDS	mVp-p	450		900	
DP Input						
	HBR2	Vp-p	1		1.3	
NTSC/PAL						
	Y/CVBS	Vp-p	0.7	1.0	1.4	
	C	Vp-p	0.6	0.8	1.0	

### 2.2. Output characteristic

Description	Signal	Unit	Min	Typical	Max	Remarks
Panel Power						
	LCD Power(12V)	VDC	11.4	12	12.6	
V by one Interface						
	Differential output	Vp-p (mV)	250	350	450	Differential +/-
AUDIO Interface						
	Output	Watt		3		
	Frequence	Hz	20Hz		20KHz	
	THD	POUT=3W@ 4Ω, THD 10%(at 5V)				
Inverter Interface						
	Power	V	11.4	12	12.6	Depends on Power
	On/Off control	V	0		3.3	L=off, H=on
	Brightness control	V	3.3		0	Option
			0		4.0	Option

## 3. FUNCTIONAL BLOCK DIAGRAM

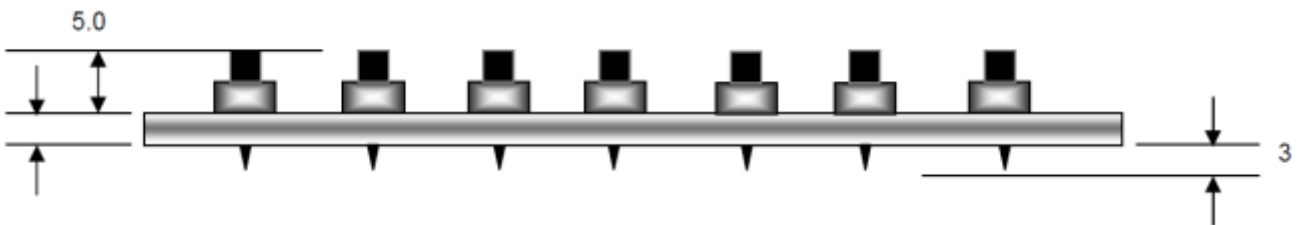
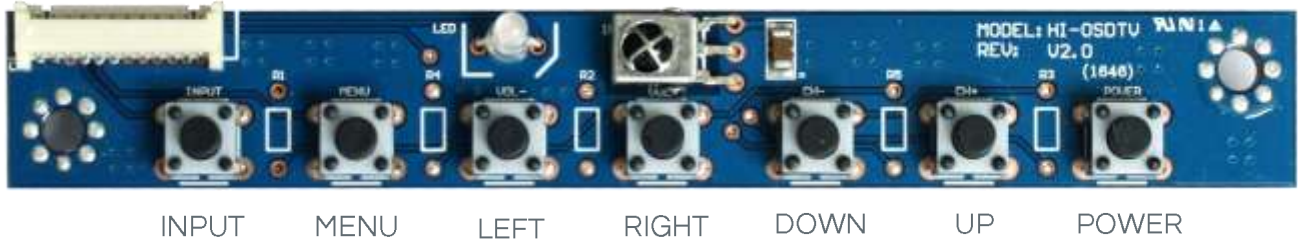


# HI-GM3458

## 4. OSD Control Board

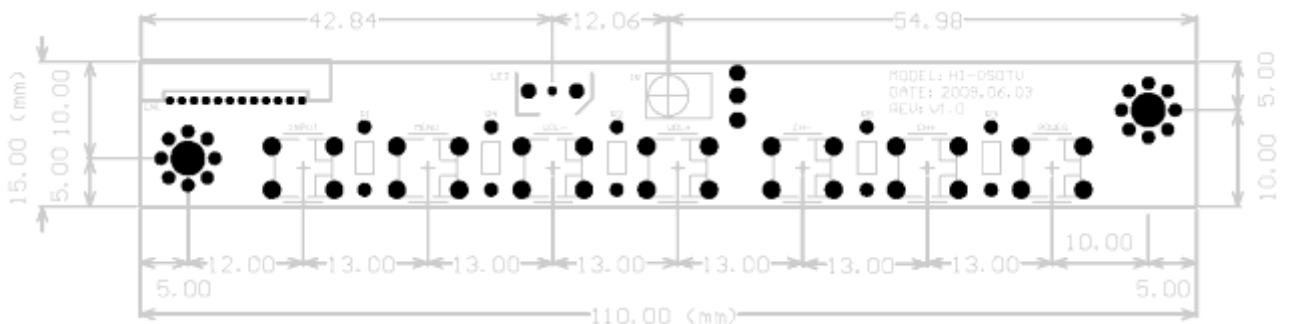
The OSD (On Screen Display) provides certain functions to have clear image and others. This board supports 7 buttons OSD operation as a standard. The control functions defined on OSD operation are as below. (Unit: mm)

### Appearance

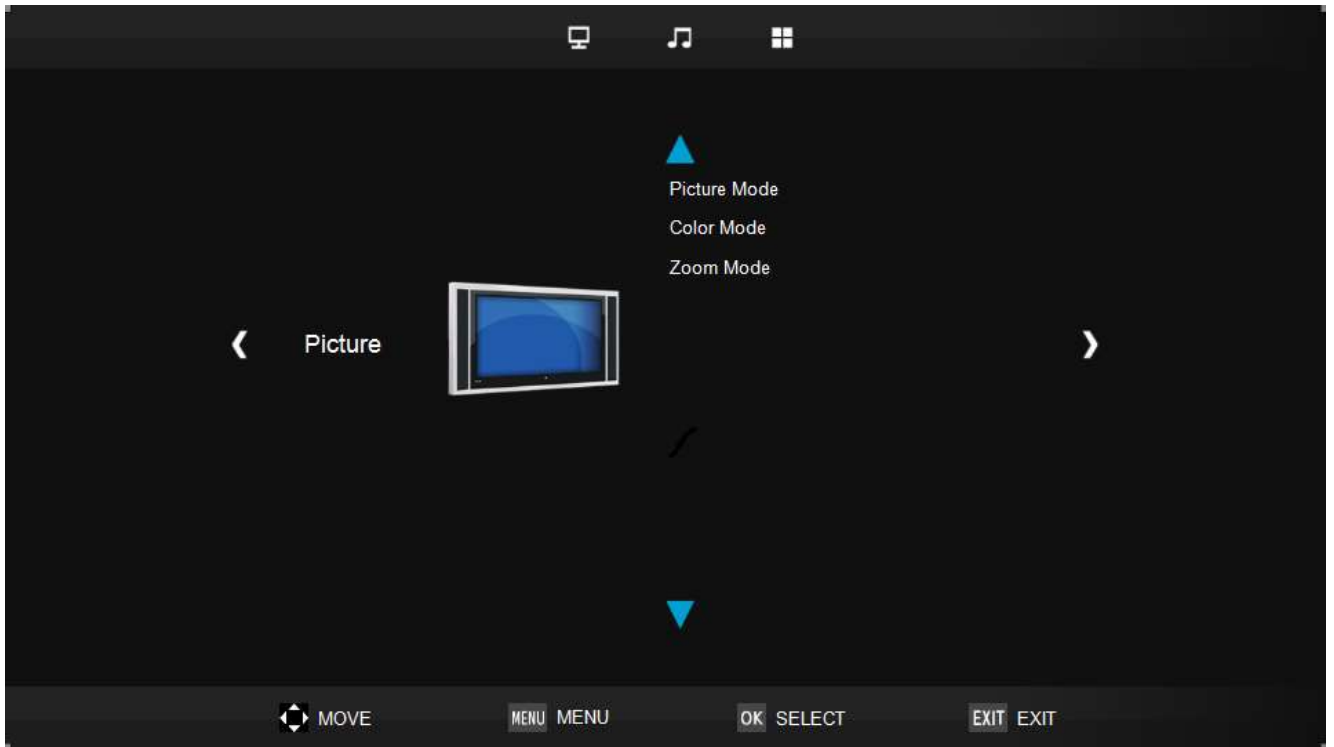


Board Size (W x H x D) : 110 x 15 x 6.6 mm

Button	Function	Status	HOT Key
LED	Indicates operation status	Green	On: Green Off: LED
POWER	Power on/off	On/Off	
MENU	Activate menu / Exit Menu		
INPUT	Input Select / Source		
LEFT	Cursor control Left		
RIGHT	Cursor control Right		
DOWN	Cursor control Down		
UP	Cursor control Up / Auto Adjust		



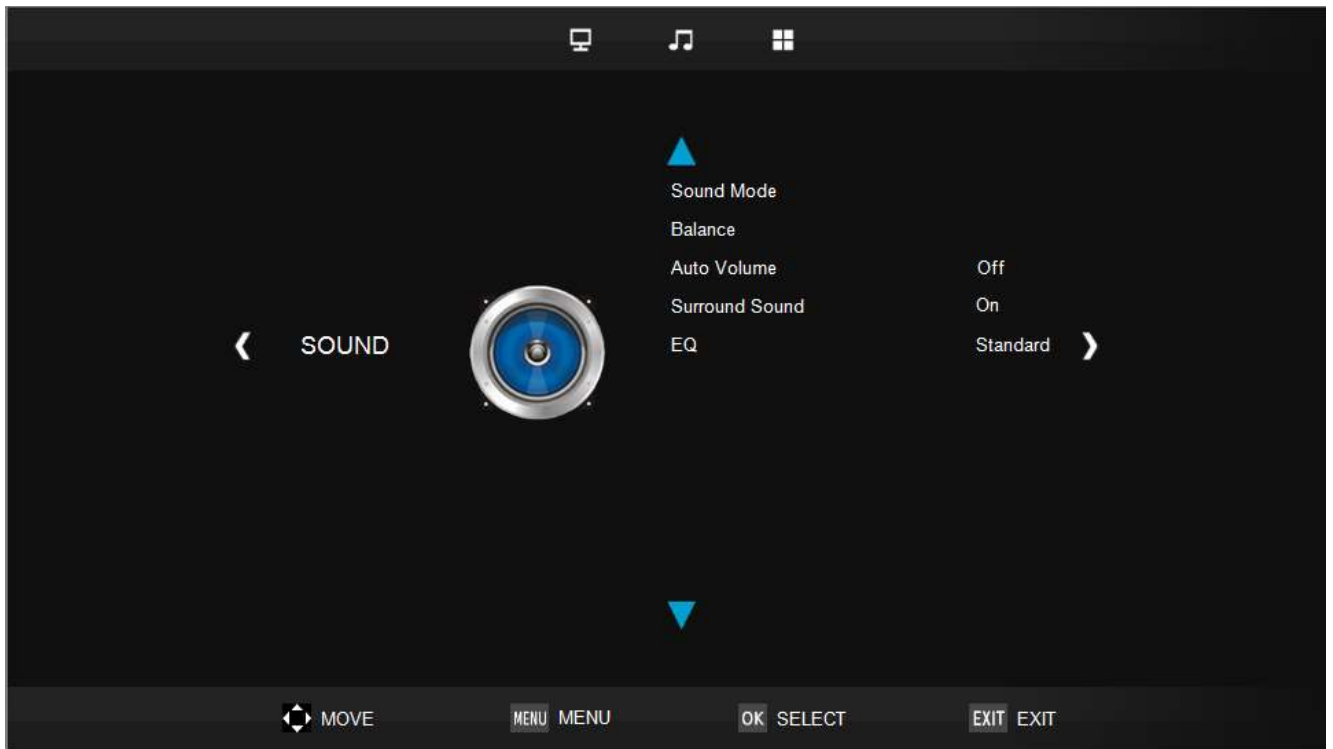
## 5-1. OSD FUNCTION



Picture Page

		OSD Menu			
Picture Mode	Mode	Dynamic	Standard	Personal	Soft
	Contrast	0 ~ 100			
	Brightness				
	Sharpness				
	Tint	-50 ~ +50 (Standard Value is 0)			
Color	0 ~ 100				
Color Mode	Mode	Cool	Normal	Warm	Personal
	Red	0 ~ 255			
	Green				
	Blue				
Zoom Mode	Full				
	4:03				
	16:09				
	Zoom1				
	Zoom2				
	Just Scan				

## 5-2. OSD FUNCTION

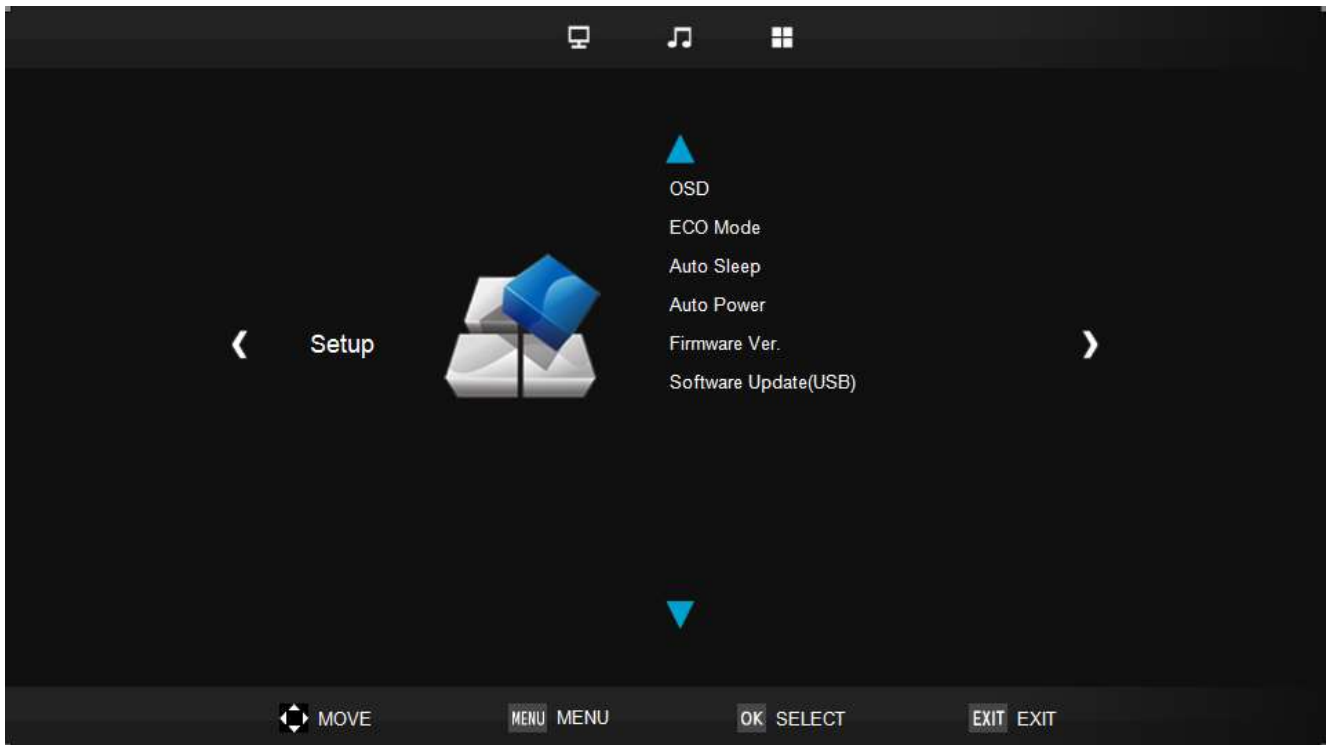


Audio page

OSD Menu						
Sound Mode		Standard	Music	Movie	ports	User
	Treble	0 ~ 100				
	Bass					
Balance	-50 ~ +50(Standard Value is 0)					
Auto volume	Off					
	ON					
Surround Sound	Off					
	ON					
EQ		Movie	Standard	Music	Personal	
	120Hz	0 ~ 100				
	500Hz					
	1.5KHz					
	5KHz					
	10KHz					



## 5-3. OSD FUNCTION

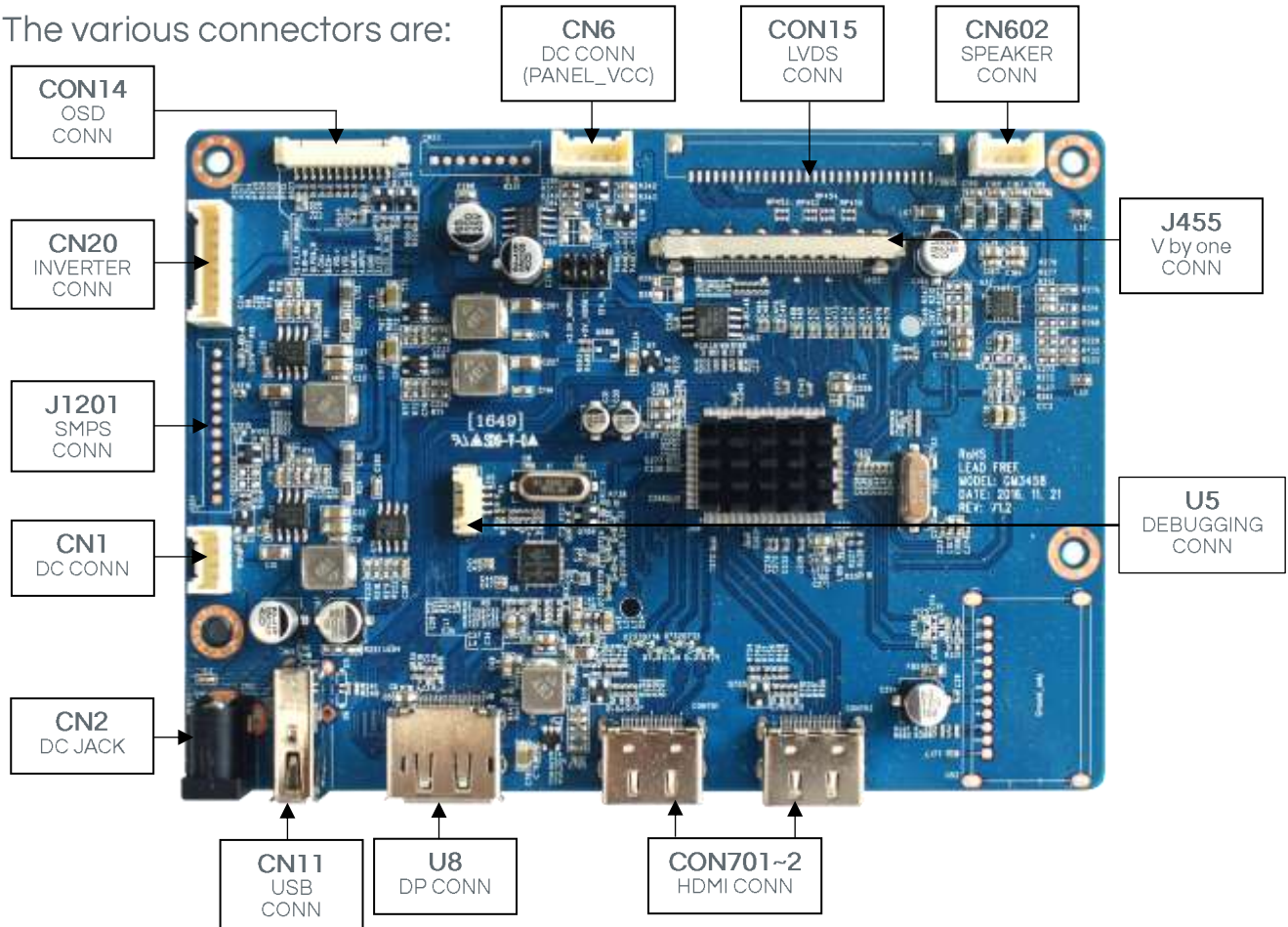


Setup page

		OSD Menu				
OSD	OSD Language	English	EN_GB	German	French	
		Spanish	Italian	Swedish	Danish	
		Polish	Dutch	Portuguese	Norwegian	
		Russian	Chinese			
	OSD Transp.	0%	25%	50%	75%	100%
	OSD Time	5 sec	15 sec	30 sec	45 sec	60 sec
ECO Mode	Global	0 ~ 100				
Auto Sleep		On				
		Off				
Auto Power		On				
		Off				
Firmware Ver.						
Software update(USB)						

## 6. CONNECTOR, PINOUT & JUMPERS

The various connectors are:



Summary:

Reference	Item	Description	Type	Manufacture
CN1	CONNECTOR	DC CONNECTOR(12V)	SMW200-04P-2.0mm	YEONHO
CN2	JACK	DC POWER JACK	2.5ø DC Jack	-
CN6	CONNECTOR	DC CONNECTOR(PANEL_VCC)	SMW200-05P-2.0mm	YEONHO
CN11	CONNECTOR	USB CONNECTOR	MOLEX_15051	MOLEX-
CN20	CONNECTOR	INVERTER CONNECTOR	SMW200-08P-2.0mm	YEONHO
CN602	CONNECTOR	SPEAKER CONNECTOR	SMW200-04P-2.0mm	YEONHO
CON701~2	CONNECTOR	HDMI CONNECTOR	SD-47266-001	-
U8	CONNECTOR	DP CONNECTOR	20P(DP-SMD)	-
CON14	CONNECTOR	OSD CONNECTOR	12505WR-12P-1.25mm	YEONHO
J1201	CONNECTOR	SMPS CONNECTOR	SMW200-12P-2.0mm	YEONHO
CON15	CONNECTOR	LVDS 60Hz CONNECTOR (OPTION)	12507WR-30P	YEONHO
J455	CONNECTOR	V by One CONNECTOR (OPTION)	FI-RE51S-VF-0.5MM	-
U5	CONNECTOR	Debugging CONNECTOR	12505WR-04P	YEONHO

## CN1: DC Connector (12V)

Pin No.	Symbol	Description
1	12V_IN	12V power in
2	12V_IN	12V power in
3	GND	Ground
4	GND	Ground

## CN6: DC Connector

Pin No.	Symbol	Description
1	PANEL-VCC	Panel T-con board supply power
2	PANEL-VCC	Panel T-con board supply power
3	PANEL-VCC	Panel T-con board supply power
4	GND	Ground
5	GND	Ground

## CN11: USB Connector

Pin No.	Symbol	Description
1	GND	Ground
2	USB1_D+	USB DATA +
3	USB1_D-L	USB DATA +
4	+5V_USB0	USB Power

## CN20: Invertor Connector

Pin No.	Symbol	Description
1~2	12V_IN	Ground
3~4	5V_NORMAL	No Connection
5~6	GND	Head phone left
7	BL-ON/OFF	Backlight on signal
8	BL-ADJUST	Backlight dimming signal

## CN602: Speaker Connector

Pin No.	Symbol	Description
1	R-	Speaker Right -
2	R+	Speaker Right +
3	L+	Speaker Left +
4	L-	Speaker Left -

## CON701~702: HDMI Connector

Pin No.	Symbol	Description
1	HDMI0-RX2P	HDMI 2line 2data +
2	GND	Ground
3	HDMI0-RX2N	HDMI 2line 2data -
4	HDMI0-RX1P	HDMI 2line 1data +
5	GND	Ground
6	HDMI0-RX1N	HDMI 2line 1data -
7	HDMI0-RX0P	HDMI 2line 0data +
8	GND	Ground
9	HDMI0-RX0N	HDMI 2line 0data -
10	HDMI0-CLKP	HDMI 2line CLK+
11	GND	Ground
12	HDMI0-CLKN	HDMI 2line CLK -
13	CEC	HDMI CEC
14	HDMI_ARC	Opt
15	HDMI0-DDC-SCL	HDMI DDC SCL
16	HDMI0-DDC-SDA	HDMI DDC SDA
17	GND	Ground
18	HDMI0/5V	HDMI power signal
19	HDMI0-HPD	HPD pin

## U8: DP Connector

Pin No.	Symbol	Description
1	DRX3N	Negative DP differential 3 data input
2	GND	Ground
3	DRX3P	Positive DP differential 3 data input
4	DRX2N	Negative DP differential 2 data input
5	GND	Ground
6	DRX2P	Positive DP differential 2 data input
7	DRX1N	Negative DP differential 1 data input
8	GND	Ground
9	DRX1P	Positive DP differential 1 data input
10	DRX0N	Negative DP differential 0 data input
11	GND	Ground
12	DRX0P	Positive DP differential 0 data input
13	GND	Ground
14	NC	Not connected
15	AUXP	Positive AUX Channel Differential data input
16	GND	Ground
17	AUXN	Negative AUX Channel Differential data input
18	DP-HPD	DP Hot plug detect
19	GND	Ground
20	DP POWER	DP 3.3V

## CON14: OSD Connector

Pin No.	Symbol	Description
1	LED-Red	RED Color
2	LED-Green	GREEN Color
3	GND	Ground
4	SOURCE	For Source Switch
5	MENU	For Menu Switch
6	LEFT	For Left Switch
7	RIGHT	For Right Switch
8	DOWN	For Down Switch
9	UP	For Up Switch
10	POWER	For Power Switch
11	IRD	IR DATA
12	3.3V	IR POWER 3.3V

## J1201: SMPS Connector

Pin No.	Symbol	Description
1	GND	Ground
2	GND	Ground
3	BL-ADJUST	Backlight dimming signal
4	BL-ON/OFF	Backlight on signal
5	12V_IN	SMPS 12V in
6	12V_IN	SMPS 12V in
7	GND	Ground
8	GND	Ground
9	+5V_NORMAL	SMPS 5V in
10	+5V_NORMAL	SMPS 5V in
11	+5V_STANDBY	SMPS Start 5V in
12	STANDBY	SMPS power on signal

## CON15: LVDS 60Hz Connector (option)

Pin No.	Symbol	Description
1~3	PANEL-VCC	Panel Power (12V/18V, 5V or 3.3V)
4~6	N.C	No Connection
7	GND	Ground
8	Y3P-EVEN	Positive(+) LVDS differential first 3 data(B port)
9	Y3M-EVEN	Negative(-) LVDS differential first 3 data(B port)
10	YCP-EVEN	Positive(+) LVDS differential first Clock(B port)
11	YCM-EVEN	Negative(-) LVDS differential first Clock(B port)
12	Y2P-EVEN	Positive(+) LVDS differential first 2 data(B port)
13	Y2M-EVEN	Negative(-) LVDS differential first 2 data(B port)
14	GND	Ground
15	Y1P-EVEN	Positive(+) LVDS differential first 1 data(B port)
16	Y1M-EVEN	Negative(-) LVDS differential first 1 data(B port)
17	GND	Ground
18	Y0P-EVEN	Positive(+) LVDS differential first 0 data(B port)
19	Y0M-EVEN	Negative(-) LVDS differential first 0 data(B port)
20	Y3P-ODD	Positive(+) LVDS differential second 3 data(A port)
21	Y3M-ODD	Negative(-) LVDS differential second 3 data(A port)
22	YCP-ODD	Positive(+) LVDS differential second Clock(A port)
23	YCM-ODD	Negative(-) LVDS differential second Clock(A port)
24	GND	Ground
25	Y2P-ODD	Positive(+) LVDS differential second 2 data(A port)
26	Y2M-ODD	Negative(-) LVDS differential second 2 data(A port)
27	Y1P-ODD	Positive(+) LVDS differential second 1 data(A port)
28	Y1M-ODD	Negative(-) LVDS differential second 1 data(A port)
29	Y0P-ODD	Positive(+) LVDS differential second 0 data(A port)
30	Y0M-ODD	Negative(-) LVDS differential second 0 data(A port)

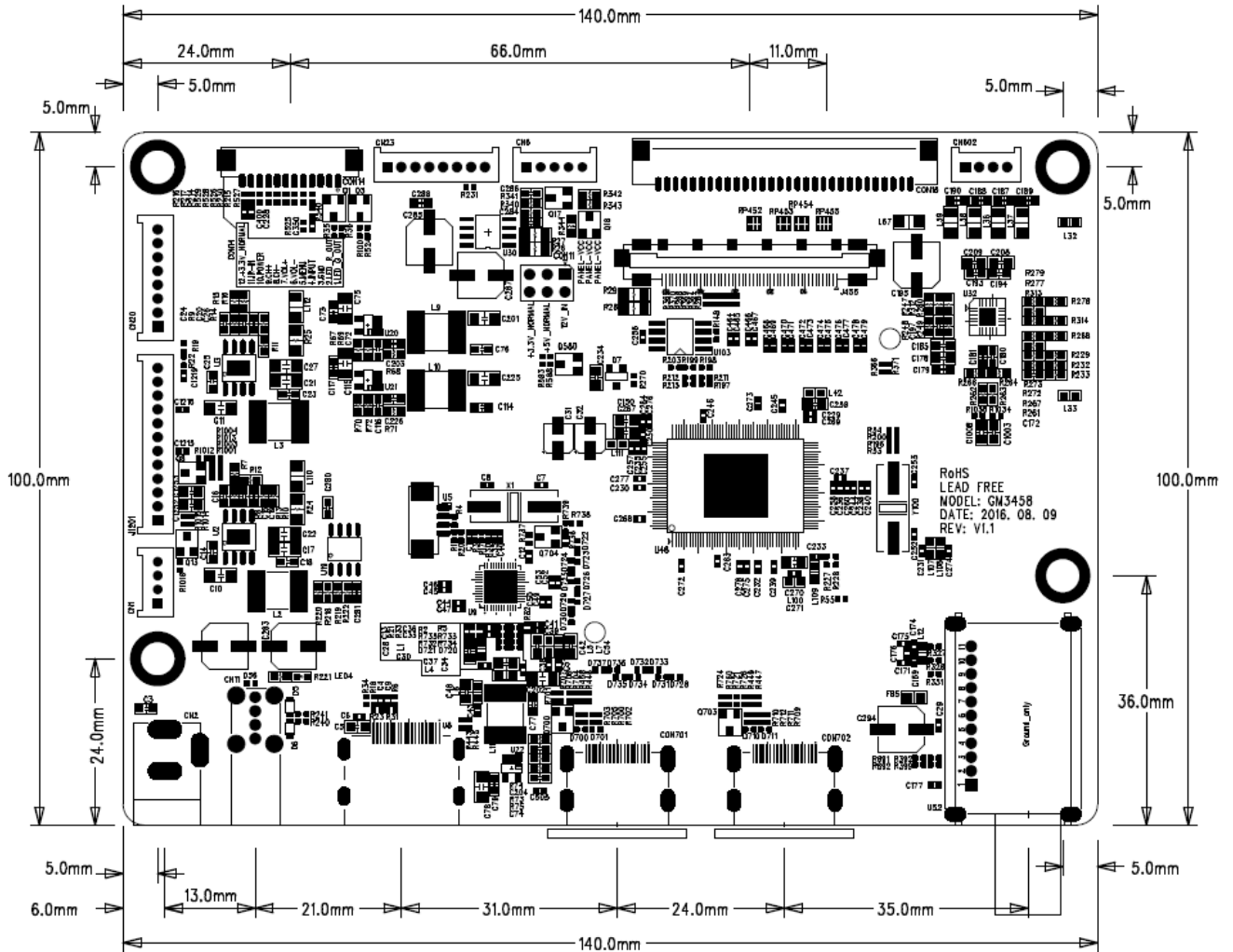
## J455: V by One Connector (option)

Pin No.	Symbol	Description
1~7	PANEL-VCC	POWER OUTPUT
8~9	NC	Not connected
10~13	GND	Ground
14~17	NC	Not connected
18	SDA	I2C Data signal
19	SCL	I2C Clock Signal
20~24	NC	Not connected
25	HTPDN	Hot plug detect output, Open drain
26	LOCKN	Lock detect output, Open drain
27	GND	Ground
28	RX0N	1st Pixel Negative V-by-One Differential data input in area A
29	RX0P	1st Pixel Positive V-by-One Differential data input in area A
30	GND	Ground
31	RX1N	2nd Pixel Negative V-by-One Differential data input in area A
32	RX1P	2nd Pixel Positive V-by-One Differential data input in area A
33	GND	Ground
34	RX2N	3rd Pixel Negative V-by-One Differential data input in area A
35	RX2P	3rd Pixel Positive V-by-One Differential data input in area A
36	GND	Ground
37	RX3N	4th Pixel Negative V-by-One Differential data input in area A
38	RX3P	4th Pixel Positive V-by-One Differential data input in area A
39	GND	Ground
40	RX4N	5th Pixel Negative V-by-One Differential data input in area A
41	RX4P	5th Pixel Positive V-by-One Differential data input in area A
42	GND	Ground
43	RX5N	6th Pixel Negative V-by-One Differential data input in area A
44	RX5P	6th Pixel Positive V-by-One Differential data input in area A
45	GND	Ground
46	RX6N	7th Pixel Negative V-by-One Differential data input in area A
47	RX6P	7th Pixel Positive V-by-One Differential data input in area A
48	GND	Ground
49	RX7N	8th Pixel Negative V-by-One Differential data input in area A
50	RX7P	8th Pixel Positive V-by-One Differential data input in area A
51	GND	Ground

## U5: Debugging Connector

Pin No.	Symbol	Description
1	VCC	3.3V
2	GND	Ground
3	CSDA	DATA
4	CSCL	Clock

## 7. CONTROLLER DIMENSIONS



[DIMENSION DOWNLOAD](#)



## 8. APPLICATION NOTES

### A. USING THE CONTROLLER WITHOUT BOTTONS ATTACHED:

This is very straightforward:

- ▷ Firstly setup the controller/display system with the buttons. With the attached controllers and display system active make any settings for color, contrast and image position as required then switch everything off.
- ▷ Remove the control switches, the 7-way cable.
- ▷ Refer to inverter specifications for details as to fixing brightness to a desired level, this may require a resistor, an open circuit or closed circuit depending on inverter

### B. INVERTER CONNECTION:

There are 3 potential issues to consider with inverter connection:

- ▷ Power
- ▷ ON/OFF
- ▷ Brightness (DIM-ADJ)

Inverter power : This should be matched with the inverter specification.

Inverter ON/OFF : This is a pin provided on some inverter for ON/OFF function and is used by this panel controller for VESA DPMS compliance. If the inverter does not have on/off pin or the on/off pin is not used DPMS will not operate. Pin5 should be matched to the inverter specification for the ON/OFF pin.

Brightness Dimming control : This controller boards are supported analog dimming and PWM dimming control method too. And it is important to consider the specifications for the inverter to be used.

## 9. APPLICABLE GRAPHIC MODE

The microprocessor measures the, H- sync V- sync and 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 Graphic modes shown on the table below and Provide more clear and stable image on a screen.

HDMI input format

Mode \ Spec	Horizontal Timing		Vertical Timing	
	Freq.	Active	Freq.	Active
	KHz	Pixel	Hz	Lind
720X480(P)	31.469	720	59.94	480
1280X720(P)	45	1280	60	720
1920X1080(I)	33.75	1920	60	540
720X480(I)	15.734	720	59.94	240
720X576(P)	31.25	720	50	576
1280X720(P)	37.50	720	50	720
1920X1080(I)	28.125	1920	50	540
720X576(I)	15.625	720	50	288
1920X1080(P)	67.432	1920	59.940	1080
1920X1080(P)	56.250	1920	50	1080
1920X1080(I)	26.973	1920	23.976	1080
1920X1080(I)	33.750	1920	30	1080
2560X1440 60Hz		2560	60	1440
3840X2160 30Hz		3840	30	2160
3840X2160 60Hz		3840	60	2160

DP input format

Mode \ Spec	Horizontal Timing		Vertical Timing	
	Freq.	Active	Freq.	Active
	KHz	Pixel	Hz	Lind
720X480(P)	31.469	720	59.94	480
1280X720(P)	45	1280	60	720
1920X1080(I)	33.75	1920	60	540
720X480(I)	15.734	720	59.94	240
720X576(P)	31.25	720	50	576
1280X720(P)	37.50	720	50	720
1920X1080(I)	28.125	1920	50	540
720X576(I)	15.625	720	50	288
1920X1080(P)	67.432	1920	59.940	1080
1920X1080(P)	56.250	1920	50	1080
1920X1080(I)	26.973	1920	23.976	1080
1920X1080(I)	33.750	1920	30	1080
2560X1440 60Hz		2560	60	1440
3840X2160 30Hz		3840	30	2160
3840X2160 60Hz		3840	60	2160

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## 10. ACCESSORY

### REMOCON

