

# HN101





## Approval

Rev. 01

Issue Date. 2018. 03. 22

Doc No. HN101 V1.0

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
			
KB.PARK			YH. HAN



## 1. General Specification

No.	Item	Description		
1	Model Name	HN101		
2	LCD Module	LVDS / TTL		
3	Input	HDMI 1.4*1(TMDS), RGB Support		
4	Resolution Support	H: 31 ~ 135kH		
		V: 55 ~ 76Hz		
5	OSD Control	Menu, Select, Down, Up, Power		5 key
	Plug & Play	VESA DDC 2B Ver1.4		
6	Power Consumption	Supply Voltage	12Vdc	
		Power	-	Board Only
7	Signal Connector	Digital	HDMI 1.4(TMDS)	
			HDCP Ver1.1	
		Analog	(R, G, B Separate H, V Sync)	
8	Board Size	W x H x D(mm)	90 x 80 x 17	
9	Dedicated Panel	BD097XGA, EJ080NA-05B, AT070TN94		



## 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				
HDMI Input						
	TMD5	mVp-p	450		900	
RGB Input						
	Analog RGB	VPP	0	0.7	-	
	Sync	VDC	0	5	5.5	
	H Frequency	KHz	31		80	Depends on Mode
	V Frequency	Hz	55	75	77	Depends on Mode

### 2.2. Output characteristic

Description	Signal	Unit	Min	Typical	Max	Remarks
Panel Power						
	LCD Power(3.3V)	VDC	3.16	3.3	3.5	
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

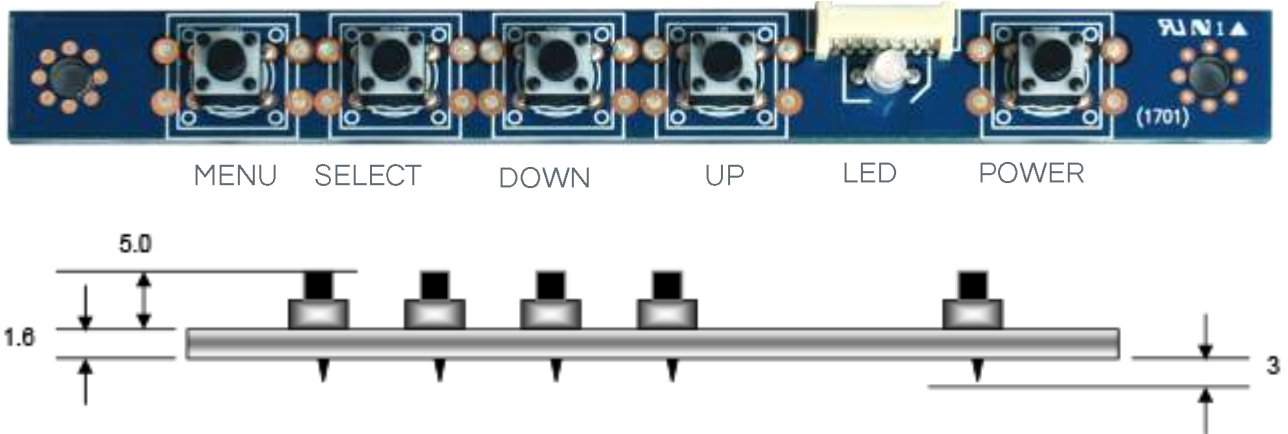
## 3. FUNCTIONAL BLOCK DIAGRAM



### 4. OSD Control Board

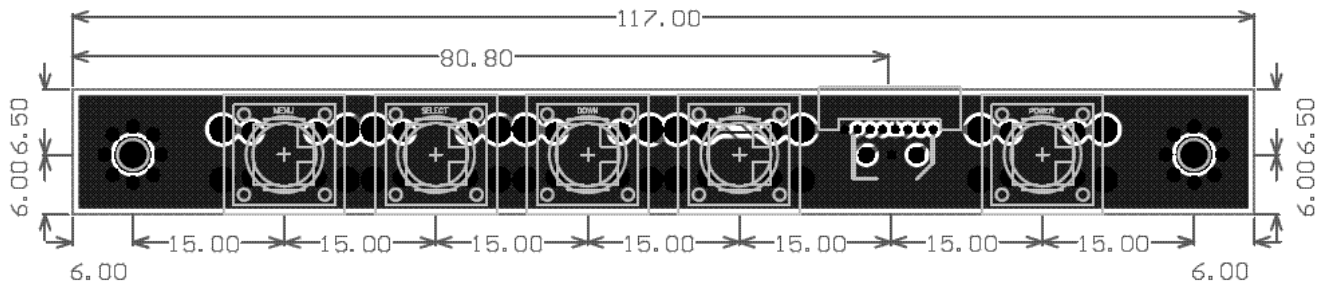
The OSD (On Screen Display) provides certain functions to have clear image and others. This board supports 5 buttons OSD operation as a standard. The control functions defined on OSD operation are as below. (Unit: mm)

#### Appearance



Board Size (W x H x D) : 112 x 12.5 x 6.6 mm

Button	Function	Status	HOT Key
LED	Indicates operation status	Green/ Red	On: Green Off: Red
POWER	Power on/off	On/Off	
MENU	Activate menu / Exit Menu		
SELECT	Input Select / Source		
DOWN	Cursor control Down		
UP	Cursor control Up / Volume Select		



## 5-1. OSD FUNCTION



Luminance page

OSD Menu			
Brightness	Brightness level Control		
	Range of Value	MIN	0
		MAX	100
Gamma	Gamma value Select		
	Mode	ON	
		OFF	
DCR (Dynamic Contrast Ration)	DCR mode Select		
	Mode	OFF	
		DBC	
		DCR	
Super Resolution	Super Resolution mode Select		
	Mode	OFF	
		Weak	
		Median	
		Strong	
		Strongest	

## 5-2. OSD FUNCTION



Color page

OSD Menu			
Color Temperature	Color Temperature mode Select		
	Mode		5000K
			6500K
			7500K
			8200K
			9200K
			9300K
			11500K
			SRGB
			User Define
Color Value Select			
Red,Green,Blue	Range of Value	MIN	0
		MAX	100



## 5-3. OSD FUNCTION



OSD Settings page

OSD Menu			
Horizontal	OSD Horizontal position Control		
	Range of Value	MIN	0
		MAX	100
Vertical	OSD Vertical position Control		
	Range of Value	MIN	0
		MAX	100
Transparency	Transparency level Control		
	Range of Value	MIN	0
		MAX	4
OSD Time Out	OSD Time Out level Control		
	Range of Value	MIN	0
		MAX	60
OSD Rotation	OSD Rotation mode Select		
	Mode	ON	
		OFF	

## 5-4. OSD FUNCTION

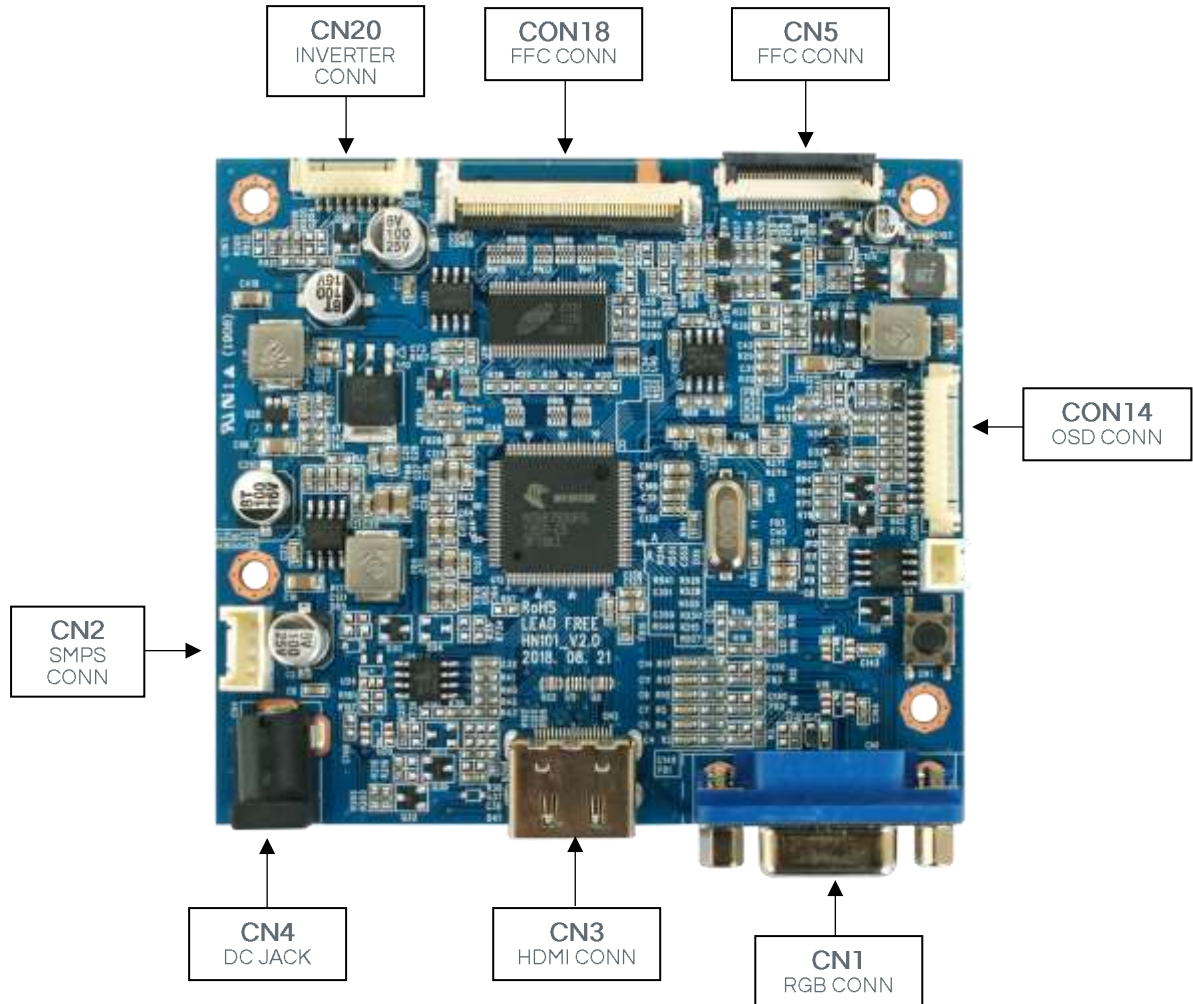


Setup page

OSD Menu				
Language	Aspect Ratio Mode Select			
	English	Spanish	French	German
	Italian	Portuguese	Russian	Chinese
Mute	Audio Mute Select			
	Mode	ON		
		OFF		
Input	Input signal Select			
	Mode	RGB		
		DVI		
		HDMI		
Display Size	Display Size Select			
	Mode	Full Screen		Smart Fit
		4:3		Smart 4:3
	Over Scan	Over Scan Mode Select		
Mode		ON		
		OFF		
Over Driver	Over Driver Mode Select			
	Mode	ON		
		OFF		
Reset	Restore to default Value			
	Mode	ON		
		OFF		

## 6. CONNECTOR, PINOUT & JUMPERS

The various connector are:



Summary:

Reference	Item	Description	Type	Manufacture
CN20	Connector	INVERTER CONNECTOR	12505WR-08P	YEONHO
CON18	Connector	FFC CONNECTOR	05004HR_50P(상접점)	YEONHO
CN5	Connector	FFC CONNECTOR	05002HR-NNJ05-30PIN	YEONHO
CON14	Connector	OSD CONNECTOR	12505WR-12P	YEONHO
CN1	Connector	RGB CONNECTOR	D-SUB DSH-15FR	YENDA
CN2	Connector	SMPS CONNECTOR	SMW200-04P	YEONHO
CN3	Connector	HDMI CONNECTOR	51U019S-30SIN-A4R-SD	CFD ELEC
CN4	JACK	12V DC Power Input	2.5ø DC Jack	CFD

## CN20: INVERTER Connector

Pin No.	Symbol	Description
1	VCC	12V
2	VCC	12V
3	VCC	5V
4	VCC	5V
5	GND	Ground
6	GND	Ground
7	BL-ON/OFF	ON/OFF
8	BL-ADJUST	DIM

## CON14: OSD Connector

Pin No.	Symbol	Description
1	LED-Red	Red Color
2	LED-Green	Green Color
3	GND	Ground
4	INPUT	For INPUT Switch
5	MENU	For Menu Switch
6	VOL+	For Volume Up Switch
7	VOL-	For Volume Down Switch
8	CH-	For Up Switch
9	CH+	For Down Switch
10	POWER	For Power Switch
11	IR_OUT	IR DATA
12	+3V3	IR Power 3.3V

## CN4: DC power Input Jack(12V)

Pin No.	Symbol	Description	Pin No.	Symbol	Description
Center	Vcc	12V	Shell	GND	Ground

## CN2: SMPS Connector

Pin No.	Symbol	Description
1	VCC	12V
2	VCC	12V
3	GND	Ground
4	GND	Ground

## CN1: ANALOG RGB INPUT (D-Sub 15P)

Pin No.	Symbol	Description
1	Red1	Red analog input
2	Green1	Green analog input
3	Blue1	Blue analog input
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	NC	Not connected
10	GND	Ground
11	GND	Ground
12	DSDA	DDC-SDA
13	HSYNC	Horizontal Sync
14	VSYNC	Vertical Sync
15	DSCL	Serial Clock Input

## CN3: 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

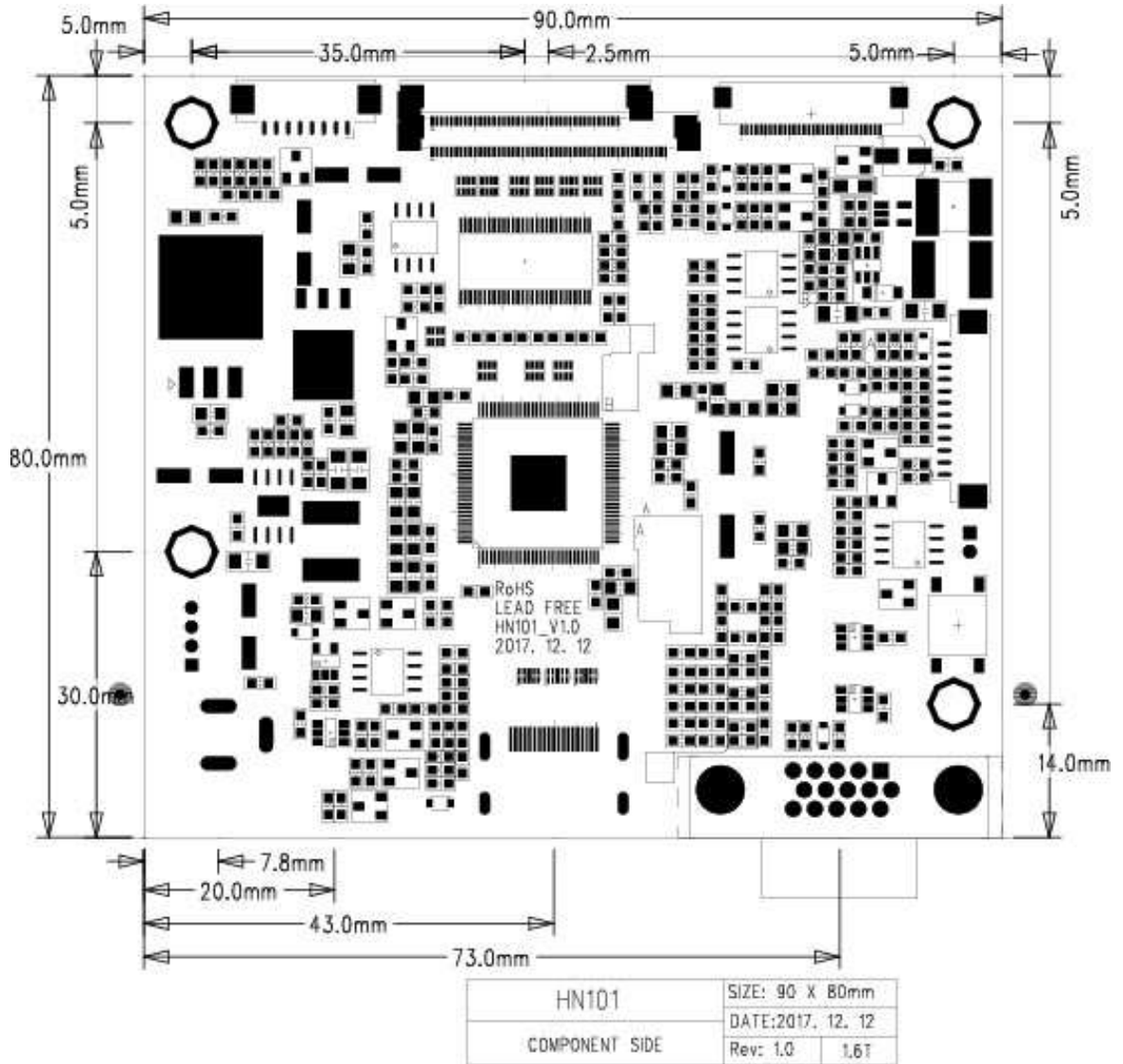
## CON18: FFC Connector

Pin No.	Symbol	Description
1	LED+	LED ANODE
2	LED+	LED ANODE
3	LED-	LED CATHODE
4	LED-	LED CATHODE
5	GND	GROUND
6	VCOM	VCOM
7	VLCD	VLCD
8	NC	NC
9	TDE	TDE
10	NC	NC
11	NC	NC
12	NC	NC
13	TB5	TB5
14	TB4	TB4
15	TB3	TB3
16	TB2	TB2
17	TB1	TB1
18	GND	GROUND
19	GND	GROUND
20	TG5	TG5
21	TG4	TG4
22	TG3	TG3
23	TG2	TG2
24	TG1	TG1
25	TG0	TG0
26	GND	GND
27	GND	GND
28	TR5	TR5
29	TR4	TR4
30	TR3	TR3
31	TR2	TR2
32	TR1	TR1
33	TR0	TR0
34	GND	GROUND
35	GND	GROUND
36	GND	GROUND
37	DCLKA	DCLKA
38	GND	GROUND
39	L/R	L/R
40	U/D	U/D
41	VGH	VGH
42	VGL	VGL
43	AVDD	AVDD
44	NC	NC
45	NC	NC
46	VCOM	VCOM
47	GND	GROUND
48	GND	GROUND
49	NC	NC
50	NC	NC

## CN5: FFC Connector

Pin No.	Symbol	Description
1	NC	NC
2	LED-	LED ANODE
3	LED-	LED ANODE
4	LED-	LED ANODE
5	LED-	LED ANODE
6	LED-	LED ANODE
7	LED-	LED ANODE
8	NC	NC
9	LED+	LED CATHODE
10	LED+	LED CATHODE
11	NC	NC
12	GND	GROUND
13	CLK+	CLOCK +
14	CLK-	CLOCK -
15	GND	GROUND
16	R2+	R2+
17	R2-	R2-
18	GND	GROUND
19	R1+	R1+
20	R1-	R1-
21	GND	GROUND
22	R0+	R0+
23	R0-	R0-
24	NC	NC
25	NC	NC
26	NC	NC
27	NC	NC
28	VCC	VCC
29	VCC	VCC
30	VCC	VCC

## 7. CONTROLLER DIMENSIONS



[DIMENSION DOWNLOAD](#)



## 9. 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.