

LC-GD70HDMI

open frame monitor with VGA and HDMI input

7.0", resolution 1024xRGBx600

1. Profile

Display system with VGA and HDMI signal input (no HDCP decryption).

- built-in OSD (on-screen display) offers adjustment of brightness, contrast and color
- 7.0" high contrast TFT display with LED backlight

2. Application

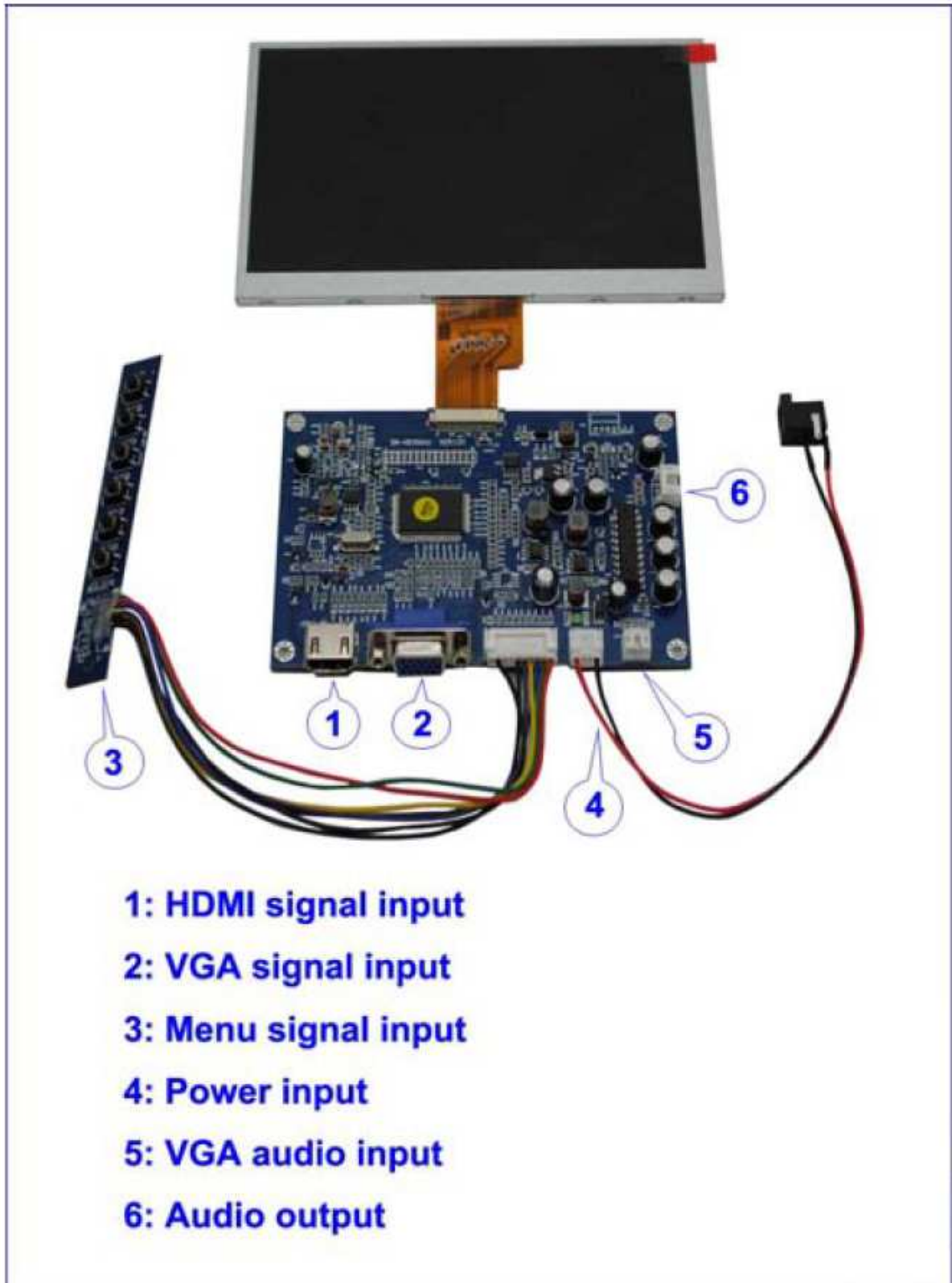
This module applies to

- Office electronic equipment
- Instrument and measure appliance
- Machinery and equipment
- Audiovisual (Car Monitor, Portable DVD Player, Long-distance terminal display)

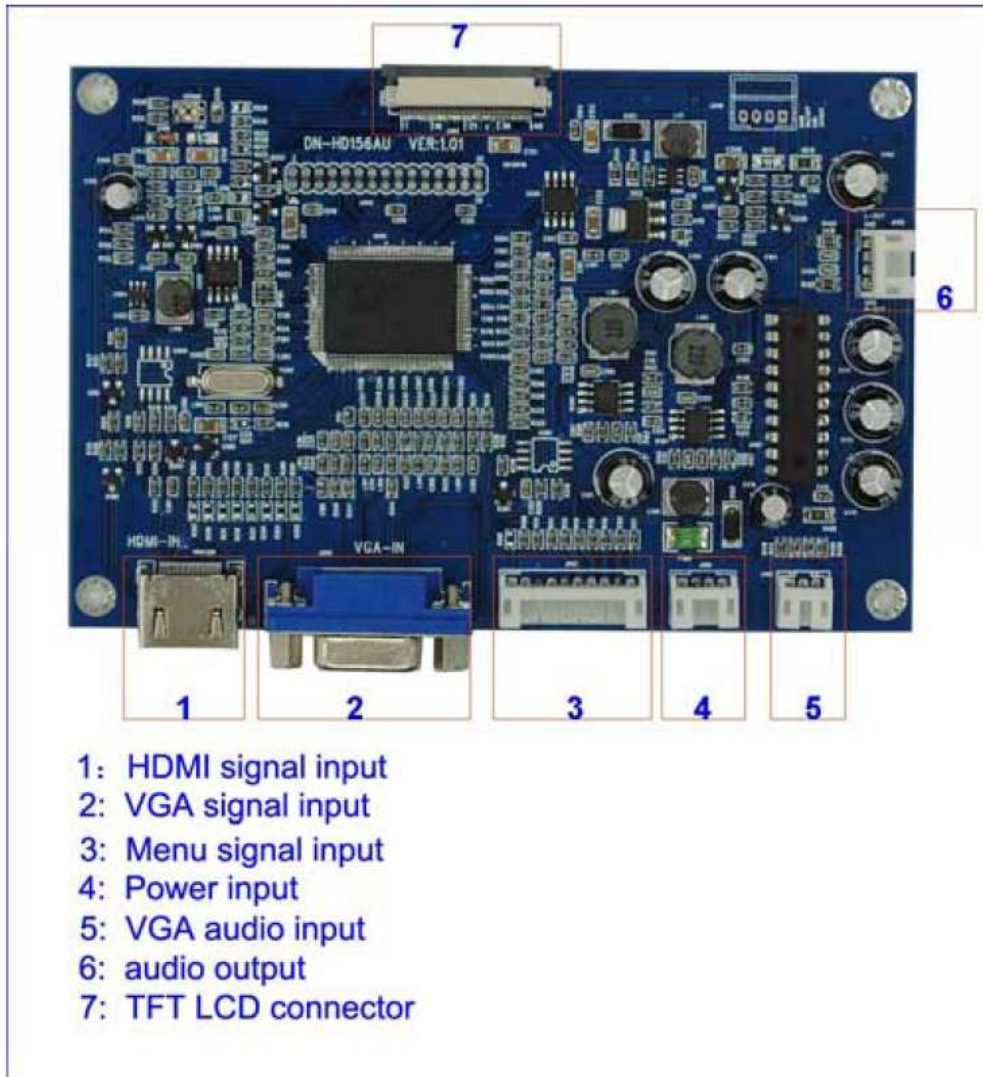
3. Main Parameters

- 7.0" TFT Display, Display ratio 16:9
- Resolution: 1024(H) x RGB x 600(V)
- View angle (U/D/L/R) : (70/75/75/75)
- Luminance: ~ 250 cd/m²
- Backlight: LED
- LED lifetime: 30.000 hr (typ) at medium brightness setting
- Signal Input: VGA, HDMI
- Power Supply Voltage: DC+12V(9-15V) (+12V < 570mA)
- Active Area (mm): 153.6 (H) x 90.0 (V)
- Outside dimension of display (mm): 165.75 (W) x 105.39 (H) x 3.4 (D)
- Structural dimension of PCB (mm): 128.0 (W) x 85.0 (H) x 16.0 (D)
- Operation temperature: -20°C ~+ 60°C
- Storage temperature: -30 °C~+70 °C
- Environment relative Humidity: 5~95 % RH

4. Display system



4.1 Controller board



4.2 supported graphic resolutions

PC-RGB (VGA) input:

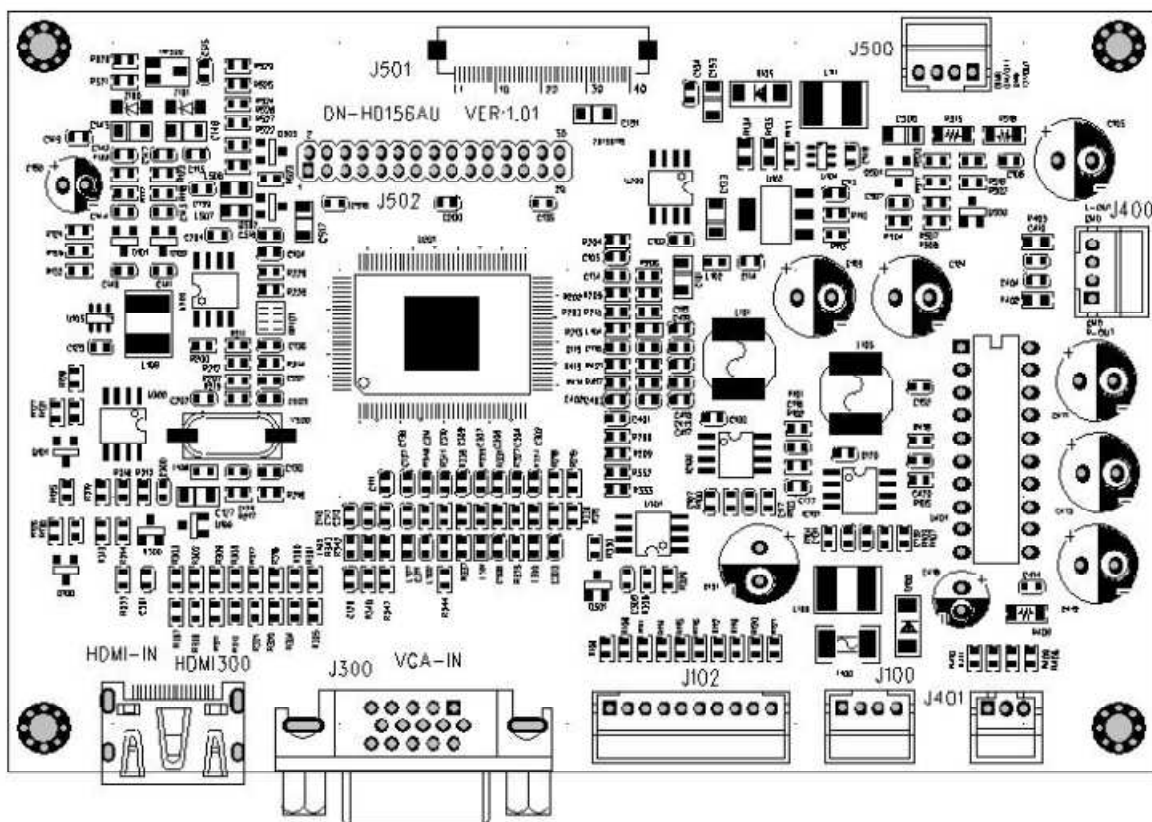
640x480	60Hz/72Hz/75Hz
720x400	70Hz (DOS MODE)
800x600	56Hz/60Hz/72Hz/75Hz
1024x768	60Hz
1152x864	60Hz
1280x768	60Hz
1280x960	60Hz
1280x1024	60Hz
1360x768	60Hz
1440x900	60Hz
1680x1050	60Hz
1920 x1080	60Hz

Recommend (native) resolution 1024x600

HDMI input:

480i 60Hz,
576i 50Hz,
480P 60Hz,
576P 50Hz,
720P 50Hz,
720P 60Hz,
1080i 50Hz,
1080i 60Hz,
1080P 50Hz,
1080P 60Hz

5. Wiring Diagram



- HDMI 300 Standard HDMI signal interface
- J300 RGB signal interface, DSUB 15PIN, female
- J102 key board for settings (menu)
- J100 Power Input
- J401 Audio Input
- J400 Audio Output
- J500 Backlight Output
- J501&J502 LVDS interface, connecting LCD Panel

5.1 J102 (menu key board)

Pin No.	Symbol	Input/Output	Description	Remark
1	VCC	O	+3.3V output	
2	GND	-	Ground	
3	LED1	I	LED indicator 1	
4	LED2	I	LED indicator 2	
5	Select/Exit	I	Exit	
6	MENU	I	Menu	
7	AUTO	I	Auto	
8	LEFT	I	Decrease	
8	RIGHT	I	Increase	
10	ON/OFF	I	On/Off	

5.2 J100 (Power input)

Pin No.	Symbol	Input/Output	Description	Remark
1	+ 12V	P	Power supply	
2	+ 12V	P	Power supply	
3	GND	-	Ground	
4	GND	-	Ground	

- Power Supply Voltage: DC+12V(9-15V) (+12V < 570mA)
- Round connector, hole diameter 5.5mm

5.3 J401 (Audio-input)

Pin No.	Symbol	Input/Output	Description	Remark
1	VGA-L	I	PC-RGB left channel input	
2	GND	-	Ground	
3	VGA-R	I	PC-RGB right channel input	

- Typ. 300mV at 10K Ω

5.4 J400 (Audio-output)

Pin No.	Symbol	Input/Output	Description	Remark
1	L-out	O	Left channel output	
2	GND	-	Ground	
3	GND	-	Ground	
4	R-out	O	Right channel output	

- Max. 1W at 8 Ω

5.5 J500 (Backlight-output)

Pin No.	Symbol	Input/Output	Description	Remark
1	DIMR	O	Backlight Pulse-Width output	
2	ON/OFF	O	On/Off	
3	GND	-	Ground	
4	12VOUT	O	12V output	

6. Setting of the TFT LCD module



- <UP>:** Press the <Up> button to move the cursor (highlighted bar) from “up” to “Down” on the OSD menu, or increase the parameters value from “small” to “large”. These parameters are such as Brightness, Contrast, Volume, etc.
- <DOWN>:** Press the <Down> button to move the cursor (highlighted bar) from “Down” to “up” on the OSD menu, or reduce the parameters value from “large” to “small”. These parameters are such as Brightness, Contrast, Volume, etc.
- <MENU>:** Press the <Menu> button to pop up the OSD menu. If menu is active, the <Menu> button is a confirmation button, it confirms the operation.
- <POWER>:** Press the <Power> button on the button board to turn the backlight ON or OFF. But this is not shutting off the power supply from AC/DC adapter, this only sets the module into standby (power saving) status. If you want to shut off the power supply entirely, please pull the DC plug of the AC/DC adapter out from the DC input connector of the module.
- <SOURCE>:** Press the <Source> button to switch the input signal between HDMI and VGA.
- <EXIT>:** Press the <Exit> button to pop up the OSD menu to exit present menu level to its previous menu level. If the menu is not activated the button can be pressed for auto adjust.

6.1 OSD menu introduction (On Screen Display)

<p>Press <Menu> to open the OSD menu list.</p> <p>The display will show the following items:</p> <p>Color Image Setting OSD Menu Audio Special</p>
<p>Color</p> <p>By pressing the <Down> or <Up> button move the cursor to the Color bar on the OSD menu. Then press the <Menu> button to pop the sub menu:</p> <p>Contrast Brightness Color Adjust Color Temp</p>
<p>Contrast</p> <p>By pressing the <Down> or <Up> button move the cursor to the Contrast bar on the OSD menu. Then press the <Menu> button to select contrast setting procedure. Press <Down> or <Up> button to adjust the image contrast value. Confirm with pressing <Menu>.</p>
<p>Brightness</p> <p>By pressing the <Down> or <Up> button move the cursor to the Brightness bar on the OSD menu. Then press the <Menu> button to select the brightness setting procedure. Press <Down> or <Up> button to adjust the image brightness value. Confirm with pressing <Menu>.</p>
<p>Color Adjust</p> <p>By pressing the <Down> or <Up> button move the cursor to the Color Adjust bar on the OSD menu. Then press the <Menu> button to pop the sub menu:</p> <p>Red Green Blue</p> <p>Press <Down> or <Up> button to select the color you want to adjust and again <Menu> button to pop up the value bar. Adjust the image color value with <Down> or <Up> button. Confirm with pressing <Menu>.</p>
<p>Color Temp</p> <p>By pressing the <Down> or <Up> button move the cursor to the Color Temp bar on the OSD menu. Then press the <Menu> button to pop up the sub menu:</p> <p>9300 6500 5800 sRGB USER</p> <p>Press <Down> or <Up> button to select the Color Temp you</p>

Confirm with pressing **<Menu>**.

Image Setting

By pressing the **<Down>** or **<Up>** button move the cursor to the Image setting bar on the OSD menu. Then press the **<Menu>** button to pop the sub menu:

Clock
Phase
Sharpness
H. Position
V. Position

Press **<Down>** or **<Up>** button to select the item you want to adjust and again **<Menu>** button to pop up the value bar or the options.

Adjust the value or the options with **<Down>** or **<Up>** button. Confirm with pressing **<Menu>**.

OSD Menu

By pressing the **<Down>** or **<Up>** button move the cursor to the OSDColor bar on the OSD menu. Then press the **<Menu>** button to pop the sub menu:

OSD H.Pos
OSD V.Pos
OSD Time
Language

Press **<Down>** or **<Up>** button to select the item you want to adjust and again **<Menu>** button to pop up the value bar or the options.

Adjust the value or the options with **<Down>** or **<Up>** button. Confirm with pressing **<Menu>**.

Audio

By pressing the **<Down>** or **<Up>** button move the cursor to the Audio bar on the OSD menu. Then press the **<Menu>** button to pop the sub menu:

Volume
Mute

Press **<Down>** or **<Up>** button to select the item you want to adjust and again **<Menu>** button to pop up the value bar or the options.

Adjust the value or the options with **<Down>** or **<Up>** button. Confirm with pressing **<Menu>**.

Special

When you press the **<Down>** or **<Up>** button move the cursor to the Special bar on the OSD menu, you can press **<Menu>** button to pop the sub menu as the left picture:

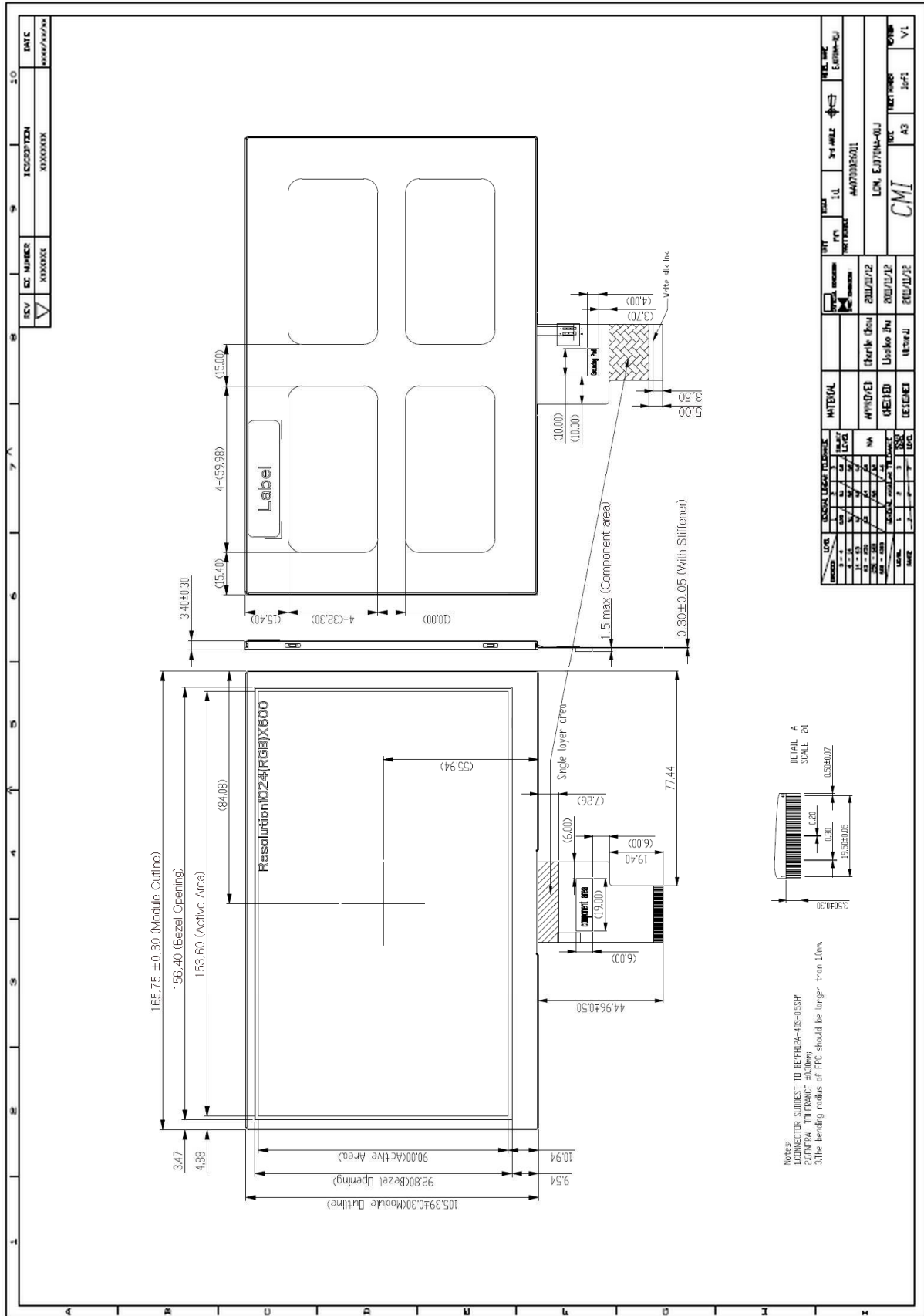
Aspect Ratio
Color Format
Super Resolution

Press **<Down>** or **<Up>** button to select the item you want to adjust and again **<Menu>** button to pop up the value bar or the options.

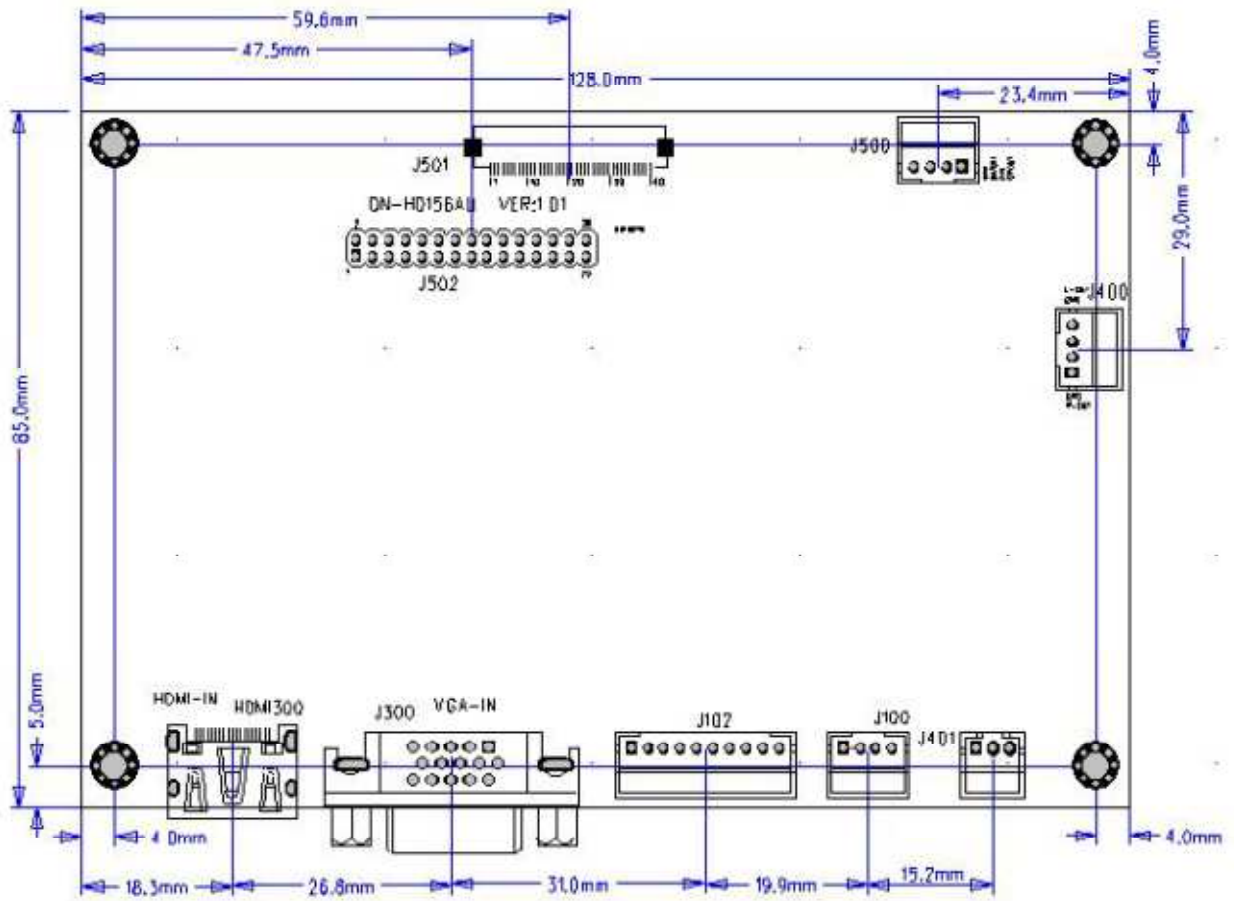
Adjust the value or the options with **<Down>** or **<Up>** button. Confirm with pressing **<Menu>**.

7. Drawings

7.1 LCD module



7.2 controller board



Dimensions: 128 mm x 85 mm x 16 mm

8. TFT LCD Panel inspection standard

8.1 Determinant standard and method:

8.1.1 The method and determinant of LCD panel:

8.1.1.1. Inspect vertically (or at 45° angle from left/right) under the Light tube (the power is 40 W) in the distance of 30cm to the panel. If there is no nick, it determines "OK", otherwise "NG".

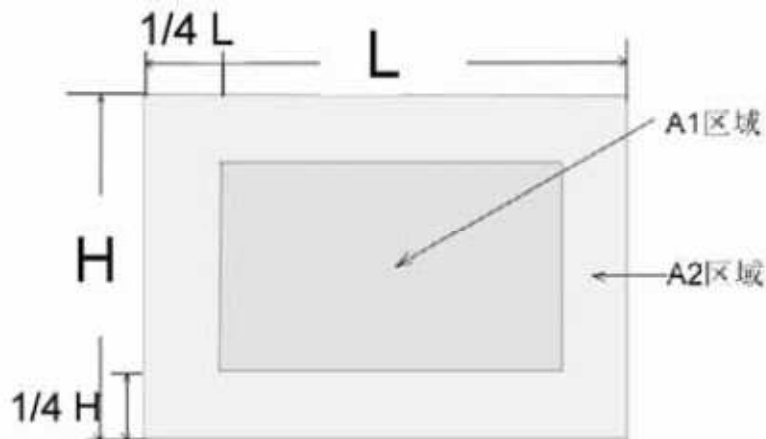
8.1.2 The method and determinative for black & white & color spots for the LCD panel:

8.1.2.1 Inspecting methods

8.1.2.1.1. Black spots: under the situation of "turn on the light", set the MASK of black spot inspection near the black spot Then compare the big and small by eyes.

8.1.2.1.2 White & Color spots: under situation of "turn on the light", Set the Mask of black spot inspection on the white spot (or color spot) then observe them by eyes if it can hide.

8.1.2.2. Division of LCD Panel



Remark: Area of A1: The center of the available area for the picture
Area of A2: The edge of the available area for the picture
(8 mm around the central area)

8.1.3 Determinate Choice

Spot Diameter (mm)		Allowed Area	
		A1	A2
Black Spot	$d \leq 0,15$	neglected	neglected
	$0,15 < d \leq 0,3$	4	4
	$0,3 < d \leq 0,5$	2	3
	$0,5 < d \leq 0,8$	0	2
White or color spot	$d \leq 0,15$	neglected	neglected
	$0,15 < d \leq 0,3$	3	3
	$0,3 < d \leq 0,5$	1	2
	$0,5 < d \leq 0,8$	0	1

Remark:

1. Size: Average Diameter = (Max Diameter + Min. Diameter) / 2
2. Using information above as a standard in order to judge if the spot appearance is dense.
3. Black & White spot: Judge the obvious spots through the change of voltage by comparison.
4. Total quantity of Black & white & color spot: $A1 + A2 \leq 4$

10. Attention

1. Connect first display and all the peripherals before supplying the power.
2. Supply voltage may not exceed upper limit.
3. The connector may not be connected in reverse, otherwise the board will be damaged.
4. Please don't touch the board in operation. Some components can get hot when powered.
5. LCD module and controller board carry sensitive electronics. You have to use anti-static measures to avoid any damage to the components.
6. TFT LCD Panel is made of glass. Handle carefully, it can easily brake.
Don't put high or uneven pressure onto the display unit when handling and mounting.
7. The connection to the display is "FPC" (flexible printed circuit). Please operate it carefully, not to break the conductive paths or the connector.
8. Don't touch key pins when you adjust brightness, color or timings. Person's body resistance can have impact on the settings.

11. Trouble shooting

1. The picture does not appear
Check to see that all the I/O and power cables is firmly seated in the socket.
Check if the brightness control is at the appropriate position, not at the minimum.
2. The screen is not synchronized
Check if the I/O signal cable is firmly seated in the socket.
Check if the output level matches the input level.
Make sure the signal timings of the computer system are within the specification of the module.
3. The position of the screen is not in the center.
Adjust the H-position, and V-position, or perform the auto adjustment.
4. The screen is too bright (too dark).
Check if the brightness or contrast control is at the appropriate position, not at the Maximum (Minimum).
5. The Screen is shaking or waving.
Press the Auto adjustment control to adjust. Move all objects which emit a magnetic field such as motor or transformer, away from the module.
Check if the specific voltage is applied.
Check if the signal timing of the computer system is within the specification of module.

12. Revision: V1.0 15/12/2013