TFT 液晶显示驱动板

规　　格　　书

客户:　　_____

驱动板型号:　**QHMD057BC-V01**

规格书型号:　**QHMD057BC-V01**

时间:　　_____

■非最终版本

□最终版本

客户回单		
核准:		签名
时间:		

时间	版本	修改项目	备注
201105	QHMD057BC-V01	初始版本	
201105	QHMD057BC-V01	AV1和AV2交换	
201105	QHMD057BC-V01	增加YPBPR的支持模式	

A. 概述:

QHMD057BC-V01采用最新单IC高集成度方案，外部元件少，工作性能稳定，显示效果独特，支持3.5到10.2的TTL/TCON信号PANEL。

QHMD057BC -V01集成TFT-LCD背光LED的驱动，能自动识别背光LED的电压，且能外接CCFL背光的驱动控制板。

QHMD057BC -V01支持2路AV输入+1路VGA输入+1路YPBPR输入（可选）+1路SV输入（可选）。

QHMD057BC -V01目前能直接驱动的数字屏型号为： AT065TN13，AT070TN92，AT080TN52，AT080TN64，AT090TN13等50P的Panel和HSD070IDW1，A104SN03，LSA40AT9001等单60P的Panel。

B. 主要特性:

- 电源输入：推荐使用12V输入，范围在+7V-15V。
- 工作温度: -20℃~+ 65 ℃.
- 默认的程序是2AV+VGA，YPBPR由菜单中的开关控制。
- **VGA信号支持: 640*350-70Hz, 640*400-70Hz, 640*480-60Hz 66Hz 72Hz 75Hz, 800*600(800*480) -56Hz 60Hz 72Hz 75Hz, 1024*768-60Hz 70Hz 75Hz ,1280*1024-60Hz等等。**
- **YPBPR信号支持: 720x576_50I，720x576_50P，720x480_60I，720x480_60P，1280x720_50P，1280x720_60P，1920x1080_50I ，1920x1080_60I等等。**
- 内置8个测试画面：红，绿，蓝，黑，白，灰，彩色条，黑白框。可手动调整和自动循环。
- 支持OSD按键板，OSD语言包括中文和英文，客户通过按键板可自行调节亮度，对比度，色度，屏翻转（需要屏支持），屏缩放等功能。
- 支持红外遥控输入（IR）：客户通过IR可实现任意功能。
- 支持外接音频板，音频菜单调节。
- 支持开机LOGO功能。
- 支持需要SPI数据初始化的Panel。
- 无信号关机设置，可设置为不使用该功能，5S，10S，默认的设置是不使用该功能。
- 车载倒车后视功能，可选有信号切换和倒车线切换，默认是倒车线切换。

  上电正常工作时，给予12V电压到倒车控制脚时能自动切换到AV2（视频信号通道2，且可指定倒车的显示通道），当倒车电压消失，能自动切换回原先的显示通道！

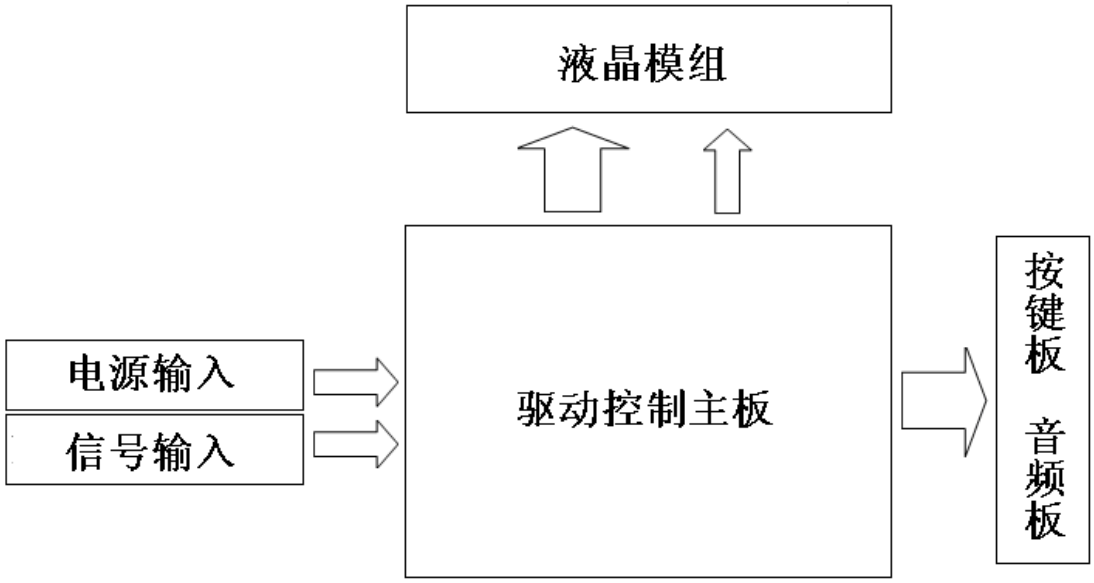
  上电待机时，给予12V电压到倒车控制脚时能自动切换到AV2（视频信号通道2，且可指定倒车的显示通道），当倒车电压消失，能自动切换回原先的显示通道并待机！

  上电无信号关机时，给予12V电压到倒车控制脚时能自动切换到AV2（视频信号通道2，且可指定倒车的显示通道），当倒车电压消失，能自动切换回原先的显示通道！

  倒车时，按键不起作用，无信号关机功能不起作用。

  倒车脚最大输入电压为24V。

C. 应用图**:**

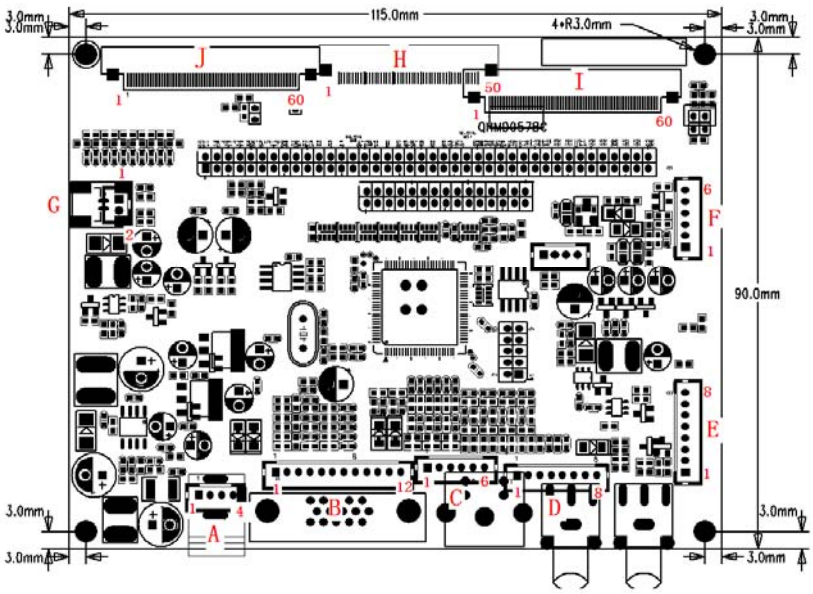


D. 功耗**:**

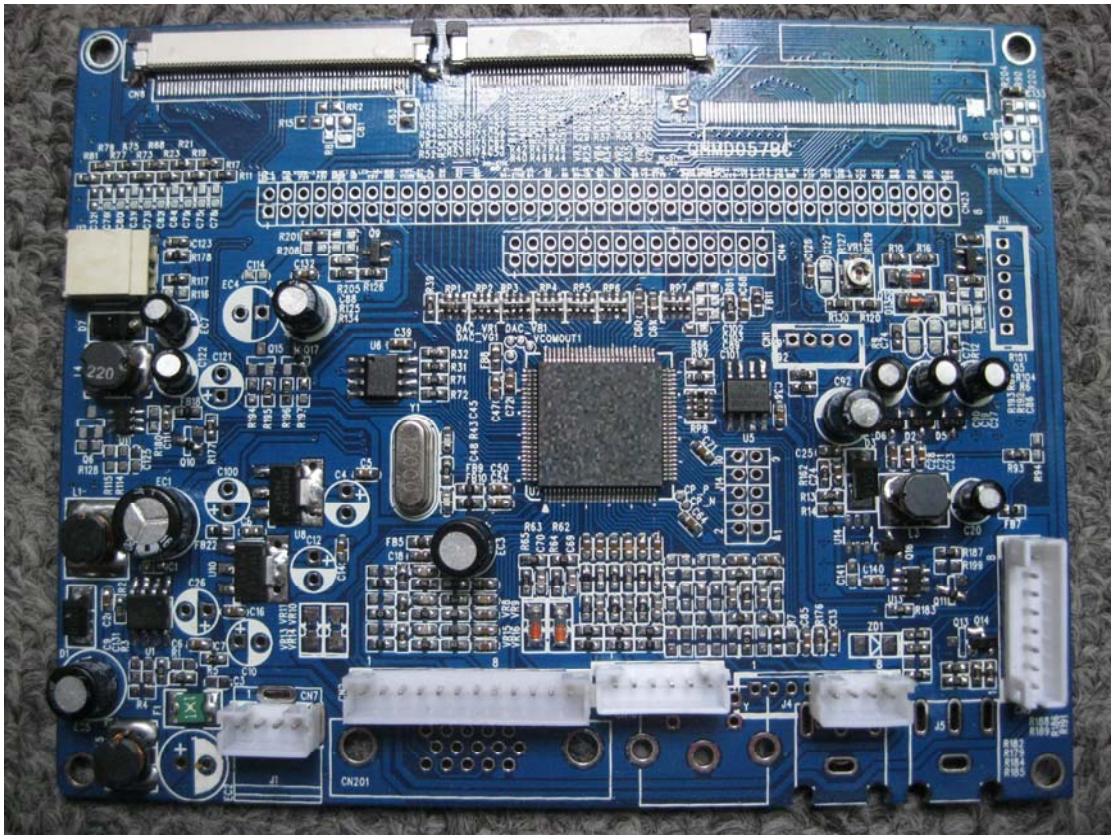
条件	电流			单位
		典型		
电源输入7V		TBD		mA
电源输入12V		380		mA
电源输入15V		TBD		mA

E. 外观

- **板尺寸:** 115.0mm*90.0mm
- **厚度:** <8mm，包括板的厚度和所有的元件。



- **产品图片:**



F. 各连接器件的定义:

连接器件名称	连接器件定义	脚名称	各脚定义
A	电源	1	电源 12V
		2	电源 12V
		3	电源地
		4	电源地
B	VGA 信号输入	1	串行时钟信号
		2	串行数据信号
		3	信号地
		4	蓝色分量信号
		5	信号地
		6	绿色分量信号
		7	信号地
		8	红色分量信号
		9	信号地
		10	水平同步信号
		11	垂直同步信号
		12	信号地
C	YPBPR 信号输入	1	PB 信号
		2	信号地
		3	Y 信号
		4	信号地
		5	PR 信号
		6	信号地
D	视频信号输入	1	色度信号----SV
		2	信号地
		3	亮度信号----SV
		4	信号地
		5	视频通道 1
		6	信号地
		7	视频通道 2
		8	信号地
E	功能	1	电源 5V
		2	地
		3	红外遥控输入脚
		4	按键板上 LED 灯的控制脚 2
		5	按键板上 LED 灯的控制脚 1
		6	按键输入通道 2
		7	按键输入通道 1/倒车输入脚
		8	地

F	CCFL 背光控制/音频控制	1	电源 12V
		2	电源 12V
		3	地
		4	音量控制脚
		5	CCFL 开关脚
		6	地
G	LED 背光控制	1	LED 高电压
		2	LED 低电压

G. 屏的每脚定义-H/I/J:

H---间距: 0.5mm/50pin

pin	define	description
1	NC/LED+	No connection/LED+
2	NC/LED+	No connection/LED+
3	NC/LED-	No connection/LED-
4	NC/LED-	No connection/LED-
5	GND	Ground
6	VCOM	Vcom Input
7	VCC	Digital Power Voltage
8	MODE	Mode Control
9	DE	Data Enable
10	VS	V Sync input
11	HS	H Sync input
12	B7	Blue data input(MSB)
13	B6	Blue data input
14	B5	Blue data input
15	B4	Blue data input
16	B3	Blue data input
17	B2	Blue data input
18	B1	Blue data input
19	B0	Blue data input(LSB)
20	G7	Green data input(MSB)
21	G6	Green data input
22	G5	Green data input
23	G4	Green data input
24	G3	Green data input
25	G2	Green data input
26	G1	Green data input
27	G0	Green data input(LSB)
28	R7	Red data input(MSB)
29	R6	Red data input
30	R5	Red data input
31	R4	Red data input
32	R3	Red data input
33	R2	Red data input
34	R1	Red data input
35	R0	Red data input(LSB)
36	GND	Ground
37	DCLK	Sample Clock
38	GND	Ground
39	LR	Left/Right Control signal

40	UD	Up/Down Control signal
41	VGH	Positive Power For Scan Driver
42	VGL	Negative Power For Scan Driver
43	AVDD	Analog Power Voltage
44	RESET	Reset
45	NC	No connection
46	VCOM	Vcom Input
47	DITHB	Dithering Function
48	GND	Ground
49	NC	No connection
50	NC	No connection

I---间距: 0.5mm/60pin

pin	define	description
1	GND	Power ground
2	AVDD	Power supply
3	Vcc	Power supply
4	R0	Red data input(LSB)
5	R1	Red data input
6	R2	Red data input
7	R3	Red data input
8	R4	Red data input
9	R5	Red data input
10	R6	Red data input
11	R7	Red data input(MSB)
12	G0	Green data input(LSB)
13	G1	Green data input
14	G2	Green data input
15	G3	Green data input
16	G4	Green data input
17	G5	Green data input
18	G6	Green data input
19	G7	Green data input(MSB)
20	B0	Blue data input(LSB)
21	B1	Blue data input
22	B2	Blue data input
23	B3	Blue data input
24	B4	Blue data input
25	B5	Blue data input
26	B6	Blue data input
27	B7	Blue data input(MSB)
28	DCLK	Sample clock

29	DE	Data Enable
30	HS	H Sync input
31	VS	V Sync input
32	MODE	Mode Control
33	RESET	Reset
34	STBYB	Standby mode
35	LR	Left/Right Control signal
36	Vcc	Power supply
37	UD	Up/Down Control signal
38	GND	Power ground
39	GND	Power ground
40	AVDD	Power supply
41	VCOM	Vcom Input
42	DITHB	Dithering Function
43	NC	No connection
44	NC	No connection
45	V10	Gamma Voltage
46	V9	Gamma Voltage
47	V8	Gamma Voltage
48	V7	Gamma Voltage
49	V6	Gamma Voltage
50	V5	Gamma Voltage
51	V4	Gamma Voltage
52	V3	Gamma Voltage
53	V2	Gamma Voltage
54	V1	Gamma Voltage
55	NC	No connection
56	VGH	Positive Power For Scan Driver
57	Vcc	Power supply
58	VGL	Negative Power For Scan Driver
59	GND	Power ground
60	NC	No connection

J---间距: 0.5mm/60pin

pin	define	description
1	GND	Power ground
2	AVDD	Power supply
3	Vcc	Power supply
4	R0	Red data input(LSB)
5	R1	Red data input
6	R2	Red data input
7	R3	Red data input
8	R4	Red data input

9	R5	Red data input
10	R6	Red data input
11	R7	Red data input(MSB)
12	G0	Green data input(LSB)
13	G1	Green data input
14	G2	Green data input
15	G3	Green data input
16	G4	Green data input
17	G5	Green data input
18	G6	Green data input
19	G7	Green data input(MSB)
20	B0	Blue data input(LSB)
21	B1	Blue data input
22	B2	Blue data input
23	B3	Blue data input
24	B4	Blue data input
25	B5	Blue data input
26	B6	Blue data input
27	B7	Blue data input(MSB)
28	DCLK	Sample clock
29	DE	Data Enable
30	HS	H Sync input
31	VS	V Sync input
32	SCL	SPI Interface
33	SDA	SPI Interface
34	CS	SPI Interface
35	NC	No connection
36	V_{CC}	Power supply
37	NC	No connection
38	GND	Power ground
39	GND	Power ground
40	AVDD	Power supply
41	VCOM	Vcom Input
42	DITHB	Dithering Function
43	NC	No connection
44	VCOM	Capacitor
45	V10	Gamma Voltage
46	V9	Gamma Voltage
47	V8	Gamma Voltage
48	V7	Gamma Voltage
49	V6	Gamma Voltage
50	V5	Gamma Voltage
51	V4	Gamma Voltage

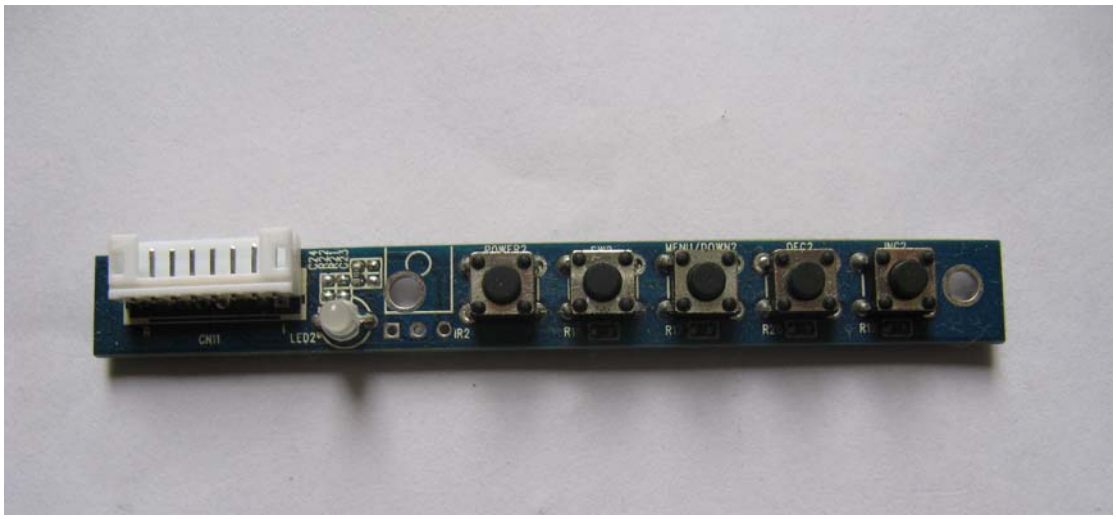
52	V3	Gamma Voltage
53	V2	Gamma Voltage
54	V1	Gamma Voltage
55	NC	No connection
56	VGH	Positive Power For Scan Driver
57	V_{CC}	Power supply
58	VGL	Negative Power For Scan Driver
59	GND	Power ground
60	NC	No connection

H. 红外遥控器(NEC编码) 和按键板

- 遥控器

目前能支持NEC编码的遥控器，且可根据客户的要求去定义任何一个遥控按键。

- 按键板



电源键　　切换键　　菜单键/菜单下键　　参数减键　　参数加键

电源键： 正常工作/待机模式。

切换键： 选择信号输入通道。

菜单键/菜单下键：菜单出现/下一菜单。

参数加键：进入选项/参数值加并保存。
视频通道下无信号输入时为 手动测试画面 键。

参数减键：进入选项/参数值减并保存。
视频通道下无信号输入时为 自动测试画面 键。

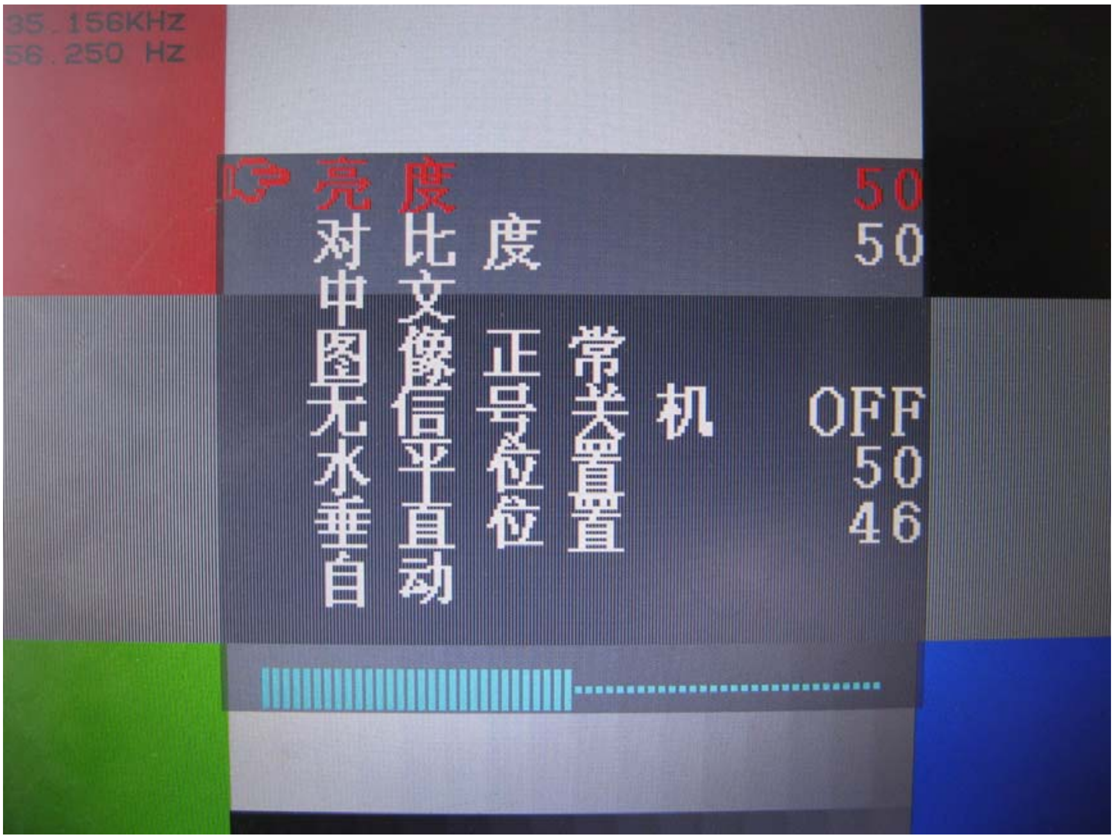
注意：所有的按键功能和位置可根据客户的要求去定义。

I. OSD 简介

视频通道下的菜单（有信号和无信号菜单一样）：

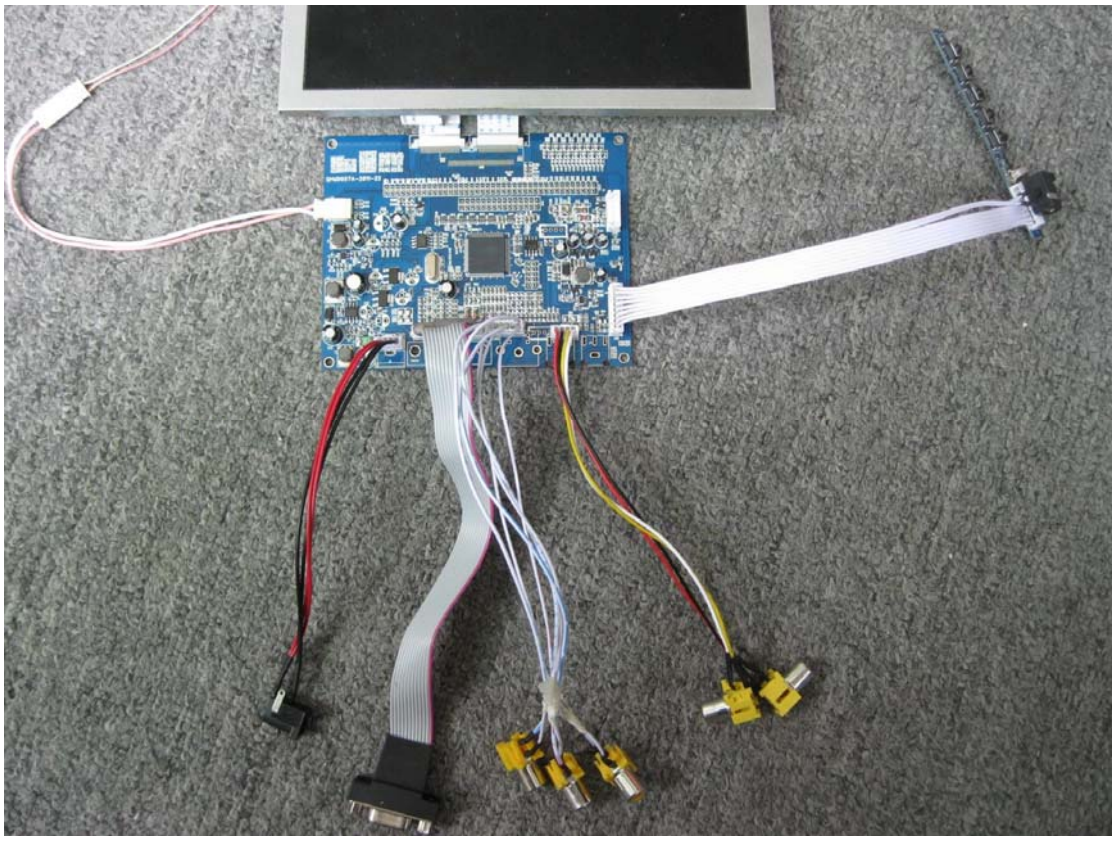
YPBPR 通道下的菜单（有信号和无信号菜单一样）：

电脑通道下的菜单：


35.156KHz
56.250 Hz
亮 度 50
对 比 度 50
中 文
图 像 正 常
无 信 号 关 机 OFF
水 平 位 置 50
垂 直 位 置 46
自 动


亮 度 80
对 比 度 80
中 文
图 像 正 常

J.连接示意图：



LCD CONTROL BOARD

SPECIFICATION

Customer: _____

Model Name: **QHMD057BC-V01**

SPEC NO: **QHMD057BC-V01**

Date: _____

■ **Preliminary Specification**

□ **Final Specification**

CUSTOMER APPROVAL		
Please return to us a copy of this page		
APPROVED BY:		CHOP & SIGNATURES
DATE:		

Time	Version	Item	Remark
201105	QHMD057BC-V01	Initial version	
201105	QHMD057BC-V01	Exchange AV1 and AV2	
201105	QHMD057BC-V01	Add YPBPR Support Mode	

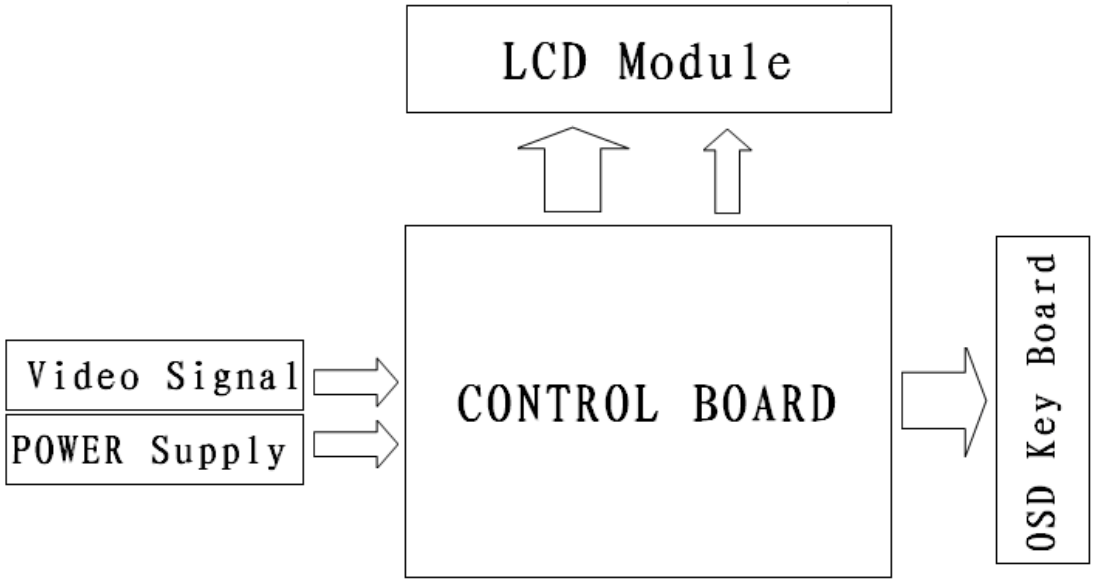
A. Overview:

The QHMD057BC-V01 is a LCD control board designed for digital TFT-LCD modules, such as AT065TN13,AT070TN92,AT080TN52,AT080TN64，AT090TN13,HSD070IDW1,A104SN03, LSA40AT9001 and so on. It can receive 2 channel NTSC/PAL CVBS input and 1 channel S-Video input(optional) and 1 channel VGA input and 1 channel YPBPR input(optional).

B. Features:

- Single power supply: +12V /range: +7V~+15V.
- Work Temperature: -20℃~+ 65 ℃.
- Default Setting is 2AV+VGA,YPBPR depends on Sub Menu.
- **VGA Support resolutions: 640*350-70Hz, 640*400-70Hz, 640*480-60Hz 66Hz 72Hz 75Hz, 800*600(800*480) -56Hz 60Hz 72Hz 75Hz, 1024*768-60Hz 70Hz 75Hz ,1280*1024-60Hz and so on。**
- **YPBPR Support resolutions: 720x576_50I，720x576_50P，720x480_60I，720x480_60P，1280x720_50P，1280x720_60P，1920x1080_50I ，1920x1080_60I and so on.**
- Support OSD Functions: BRI adjust, CNT adjust, SAT adjust, Panel Rotate, Panel Scale and so on.
- Support IR functions.
- 8 Test Patterns: Red, Green, Blue, Black, White, Gray, Color Bar, Dot. Manual Adjust and Auto Loop.
- Support External Audio Board and Volume Menu Adjust.
- Support Power on Display LOGO.
- Support SPI Panel.
- Unique display image manipulation.
- NO SYNC OFF Function: No sync Off Mode, include OFF/5S/10S, the default setting is OFF.
- Car Reverse Function(Optional):
  - i) Power on, Auto switch to AV2(can be changed) when Car Reverse Voltage give. And auto switch to original status when the voltage is disappear.
  - ii) Power off, Auto switch to AV2(can be changed) when Car Reverse Voltage give. And auto switch to Power Off Mode when the voltage is disappear.
  - iii) No SYNC off，Auto switch to AV2(can be changed) when Car Reverse Voltage give. And auto switch to original status when the voltage is disappear.
  - iv) No key effect when Car Reverse Function is enable.
  - v) The MAX Voltage of the Car Reverse Function is 24V.

C. Application diagram:

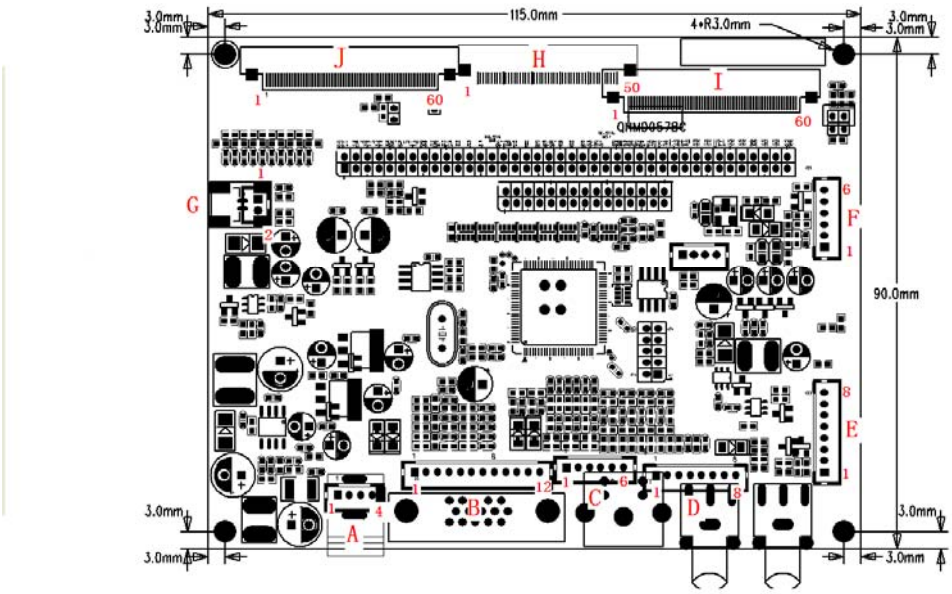


D. Power Consumption

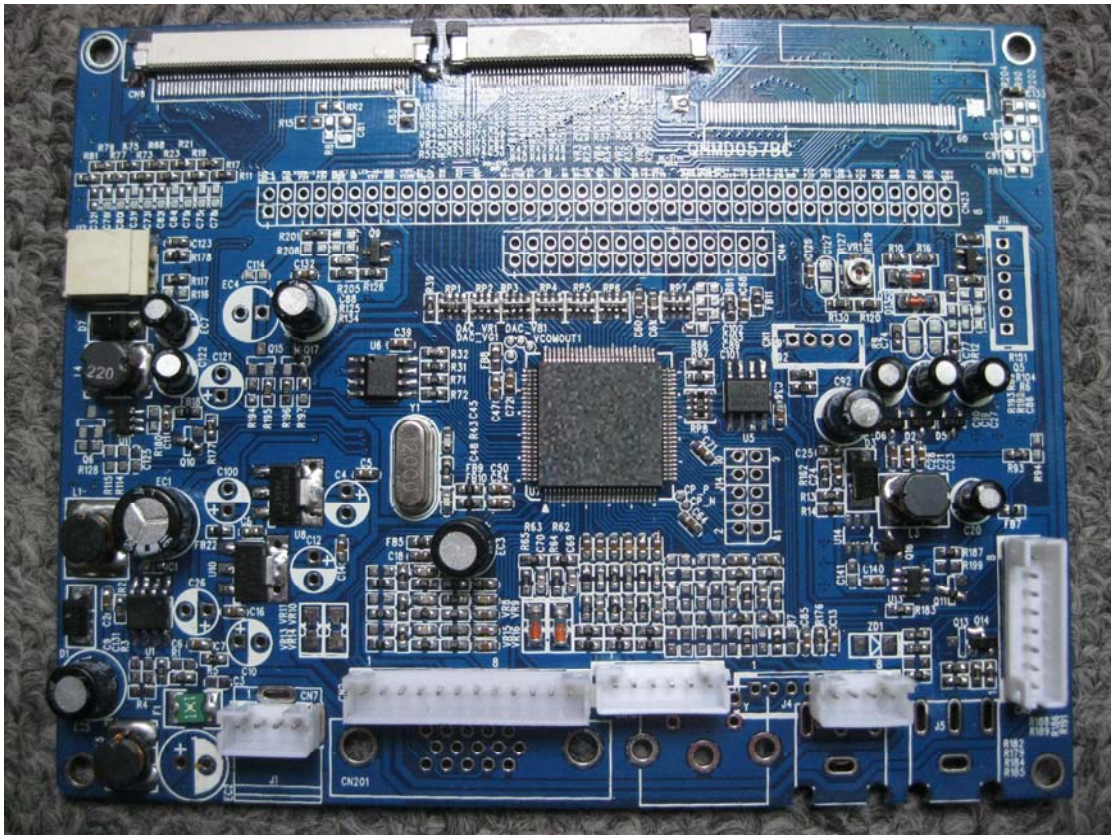
Condition	Current Consumption			Unit
	Min	Typ	Max	
Vin = 7V		TBD		mA
Vin = 12V		380		mA
Vin = 15V		TBD		mA

E. Outline Drawing

- **Size:** 115.0mm*90.0mm
- **Thickness:** <8mm, including PCB board.



- **Product Photo:**



F. Connector interface description:

Connector Number	Connector Description	Pin Number	Definition
A	POWER	1	12V
		2	12V
		3	GND
		4	GND
B	VGA IN	1	SCL
		2	SDA
		3	GND
		4	B
		5	GND
		6	G
		7	GND
		8	R
		9	GND
		10	HS
		11	VS
		12	GND
C	YPBPR IN	1	PB
		2	GND
		3	Y
		4	GND
		5	PR
		6	GND
D	VIDEO IN	1	C-Y/C
		2	GND
		3	Y-Y/C
		4	GND
		5	AV1
		6	GND
		7	AV2
		8	GND
E	FUNCTION	1	5V
		2	GND
		3	IR
		4	LED2
		5	LED1
		6	KEY2
		7	KEY1-Car Reverse
		8	GND

F	BLCTL/AUDIO	1	12V
		2	12V
		3	GND
		4	AUDIO PWM
		5	CCFLON/OFF
		6	GND
G	LED	1	HIGH
		2	LOW

G. Connector Define-H/I/J:

H----Pitch: 0.5mm/50pin

pin	define	description
1	NC/LED+	No connection/LED+
2	NC/LED+	No connection/LED+
3	NC/LED-	No connection/LED-
4	NC/LED-	No connection/LED-
5	GND	Ground
6	VCOM	Vcom Input
7	VCC	Digital Power Voltage
8	MODE	Mode Control
9	DE	Data Enable
10	VS	V Sync input
11	HS	H Sync input
12	B7	Blue data input(MSB)
13	B6	Blue data input
14	B5	Blue data input
15	B4	Blue data input
16	B3	Blue data input
17	B2	Blue data input
18	B1	Blue data input
19	B0	Blue data input(LSB)
20	G7	Green data input(MSB)
21	G6	Green data input
22	G5	Green data input
23	G4	Green data input
24	G3	Green data input
25	G2	Green data input
26	G1	Green data input
27	G0	Green data input(LSB)
28	R7	Red data input(MSB)
29	R6	Red data input
30	R5	Red data input
31	R4	Red data input
32	R3	Red data input
33	R2	Red data input
34	R1	Red data input
35	R0	Red data input(LSB)
36	GND	Ground
37	DCLK	Sample Clock
38	GND	Ground
39	LR	Left/Right Control signal

40	UD	Up/Down Control signal
41	VGH	Positive Power For Scan Driver
42	VGL	Negative Power For Scan Driver
43	AVDD	Analog Power Voltage
44	RESET	Reset
45	NC	No connection
46	VCOM	Vcom Input
47	DITHB	Dithering Function
48	GND	Ground
49	NC	No connection
50	NC	No connection

I----Pitch: 0.5mm/60pin

pin	define	description
1	GND	Power ground
2	AVDD	Power supply
3	Vcc	Power supply
4	R0	Red data input(LSB)
5	R1	Red data input
6	R2	Red data input
7	R3	Red data input
8	R4	Red data input
9	R5	Red data input
10	R6	Red data input
11	R7	Red data input(MSB)
12	G0	Green data input(LSB)
13	G1	Green data input
14	G2	Green data input
15	G3	Green data input
16	G4	Green data input
17	G5	Green data input
18	G6	Green data input
19	G7	Green data input(MSB)
20	B0	Blue data input(LSB)
21	B1	Blue data input
22	B2	Blue data input
23	B3	Blue data input
24	B4	Blue data input
25	B5	Blue data input
26	B6	Blue data input
27	B7	Blue data input(MSB)

28	DCLK	Sample clock
29	DE	Data Enable
30	HS	H Sync input
31	VS	V Sync input
32	MODE	Mode Control
33	RESET	Reset
34	STBYB	Standby mode
35	LR	Left/Right Control signal
36	Vcc	Power supply
37	UD	Up/Down Control signal
38	GND	Power ground
39	GND	Power ground
40	AVDD	Power supply
41	VCOM	Vcom Input
42	DITHB	Dithering Function
43	NC	No connection
44	NC	No connection
45	V10	Gamma Voltage
46	V9	Gamma Voltage
47	V8	Gamma Voltage
48	V7	Gamma Voltage
49	V6	Gamma Voltage
50	V5	Gamma Voltage
51	V4	Gamma Voltage
52	V3	Gamma Voltage
53	V2	Gamma Voltage
54	V1	Gamma Voltage
55	NC	No connection
56	VGH	Positive Power For Scan Driver
57	Vcc	Power supply
58	VGL	Negative Power For Scan Driver
59	GND	Power ground
60	NC	No connection

J----Pitch: 0.5mm/60pin

pin	define	description
1	GND	Power ground
2	AVDD	Power supply
3	Vcc	Power supply
4	R0	Red data input(LSB)
5	R1	Red data input
6	R2	Red data input
7	R3	Red data input

8	R4	Red data input
9	R5	Red data input
10	R6	Red data input
11	R7	Red data input(MSB)
12	G0	Green data input(LSB)
13	G1	Green data input
14	G2	Green data input
15	G3	Green data input
16	G4	Green data input
17	G5	Green data input
18	G6	Green data input
19	G7	Green data input(MSB)
20	B0	Blue data input(LSB)
21	B1	Blue data input
22	B2	Blue data input
23	B3	Blue data input
24	B4	Blue data input
25	B5	Blue data input
26	B6	Blue data input
27	B7	Blue data input(MSB)
28	DCLK	Sample clock
29	DE	Data Enable
30	HS	H Sync input
31	VS	V Sync input
32	SCL	SPI Interface
33	SDA	SPI Interface
34	CS	SPI Interface
35	NC	No connection
36	V_{CC}	Power supply
37	NC	No connection
38	GND	Power ground
39	GND	Power ground
40	AVDD	Power supply
41	VCOM	Vcom Input
42	DITHB	Dithering Function
43	NC	No connection
44	VCOM	Capacitor
45	V10	Gamma Voltage
46	V9	Gamma Voltage
47	V8	Gamma Voltage
48	V7	Gamma Voltage
49	V6	Gamma Voltage
50	V5	Gamma Voltage

51	V4	Gamma Voltage
52	V3	Gamma Voltage
53	V2	Gamma Voltage
54	V1	Gamma Voltage
55	NC	No connection
56	VGH	Positive Power For Scan Driver
57	V_{CC}	Power supply
58	VGL	Negative Power For Scan Driver
59	GND	Power ground
60	NC	No connection

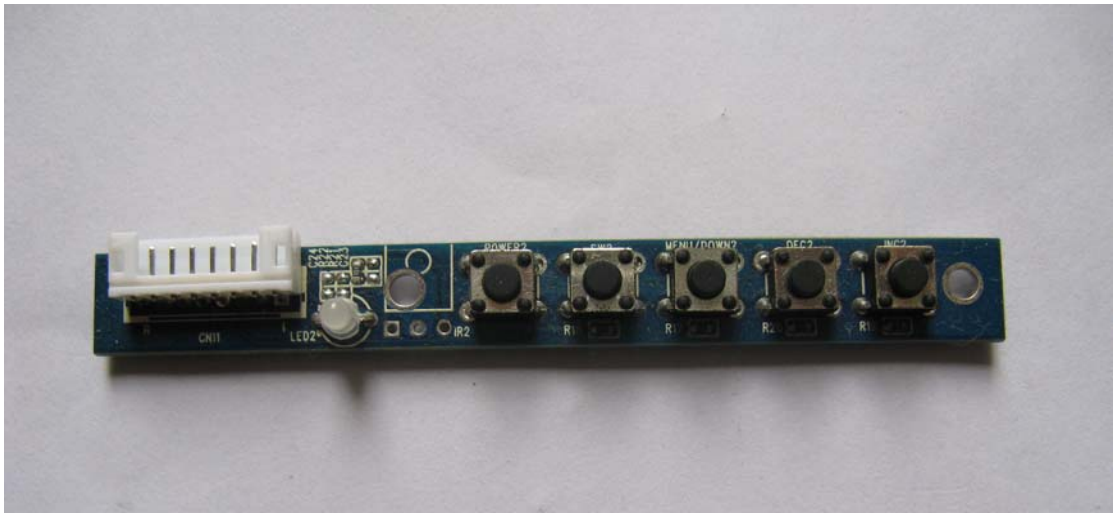
H. REMOTE (NEC CODE) AND KEY BOARD

- **REMOTE**

Complete OSD Function and IR Function（NEC CODE）,could be modified to meet different requirements of customers.

NOTE: The all Remote keys could be defined any function you want.

- **KEY BOARD**



POWER SOURCE MENU/DOWN MINUS PLUS

POWER : Power on/off.
SOURCE : Switch the input source.
MENU : OSD on/Page move.
MINUS : Minus value and save.
Manual Adjust Test Pattern when No SYNC Input at VIDEO Channel
PLUS : Plus value and save.
AUTO Loop Test Pattern when No SYNC Input at VIDEO Channel

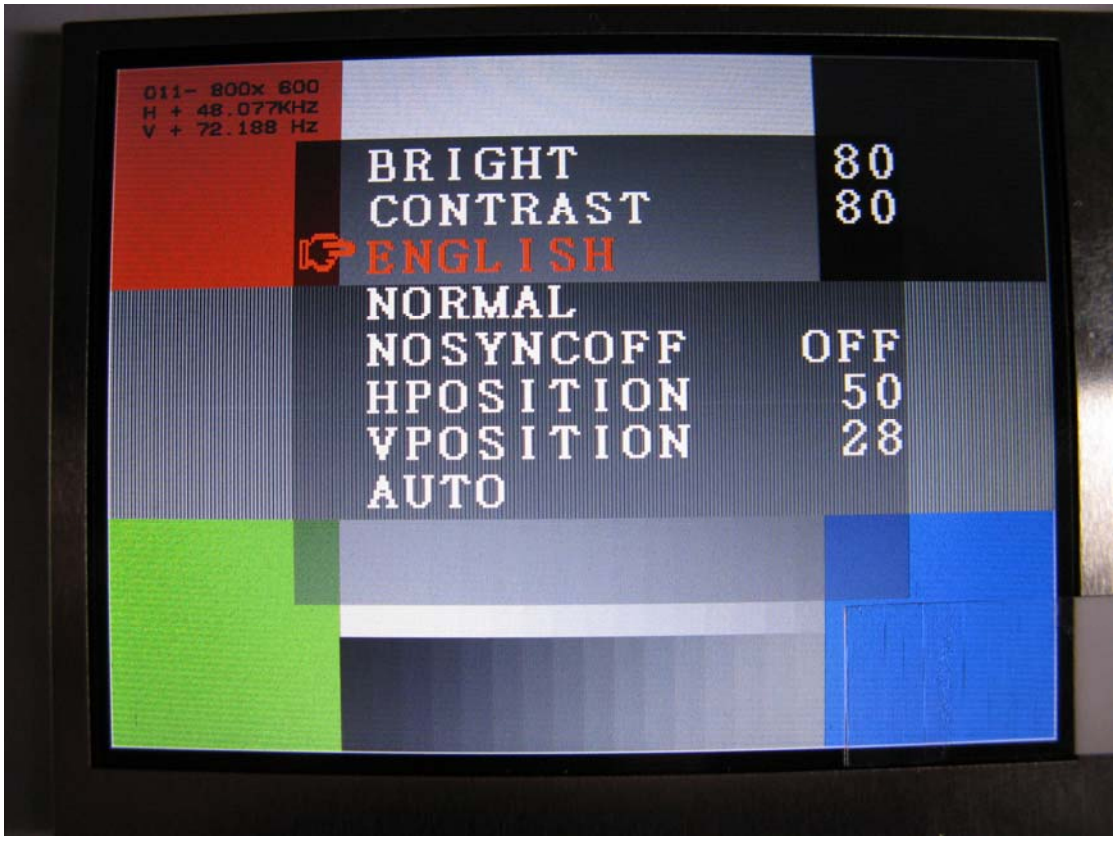
NOTE: The all Keyboard keys could be defined any function you want.

I. OSD Function

VIDEO Channel:

YPBPR Channel:

VGA Channel:


011- 800x 600
H + 48.077KHz
V + 72.188 Hz
BRIGHT 80
CONTRAST 80
ENGLISH
NORMAL
NOSYNCOFF OFF
HPOSITION 50
VPOSITION 28
AUTO


BRIGHT 80
CONTRAST 80
ENGLISH
NORMAL

J. Connect Example