



# SPECIFICATION FOR TFT LCD MODULE

CUSTOMER : \_\_\_\_\_

CUSTOMER MODULE : \_\_\_\_\_

HL MODEL :           HG043HV002P01          

Preliminary Specification

Final Specification

Customer Confirmation column:

Approved by : \_\_\_\_\_ Dept. : \_\_\_\_\_ Data : \_\_\_\_\_

Please return one of the copies of the specification with your signature to us within two weeks after you receive this document. If it is not returned, we will assume that you agree to the entire contents of this specification document.

| Designed by | Checked by | Approved by |
|-------------|------------|-------------|
|             |            |             |



## 一、产品描述

### Product Description

|      |                 |
|------|-----------------|
| 产品名称 | 液晶显示模组          |
| 简称   | TFT-LCM         |
| 型号   | HG043HV002P01   |
| 制式   | PAL/NTSC 自动     |
| 尺寸   | 4.3 寸           |
| 结构   | 液晶显示屏+驱动板       |
| 产品应用 | 楼宇对讲、可视电话、车用显示器 |
| 品质标准 | A               |

## 二、产品参数

### Product parameters

|      |                                         |
|------|-----------------------------------------|
| 分辨率  | 480*3 (RGB) *272                        |
| 显示效果 | TFT 彩色                                  |
| 显示区域 | 95.04 (W) 53.85 (H) mm                  |
| 点阵大小 | 0.066 (W) *0.198 (H) mm                 |
| 显示比例 | 16:9                                    |
| 视角范围 | 50/70/70/70                             |
| 输入信号 | 标准值: $V_{p-p}$ ,                        |
| 信号范围 | 最小值: $0.5 V_{p-p}$ , 最大值: $2.0 V_{p-p}$ |
| 工作电压 | 标准值: 12V                                |
| 电压范围 | 9V-18V                                  |
| 工作电流 | DC100mA $\pm$ 20mA (当 DC12V 供电时)        |
| 功率   | $\leq 1.5W$                             |
| 启动时间 | $\leq 1.6S$                             |



## 三、液晶屏产品结构

### LCD product structure

#### 1、驱动参数/极限条件

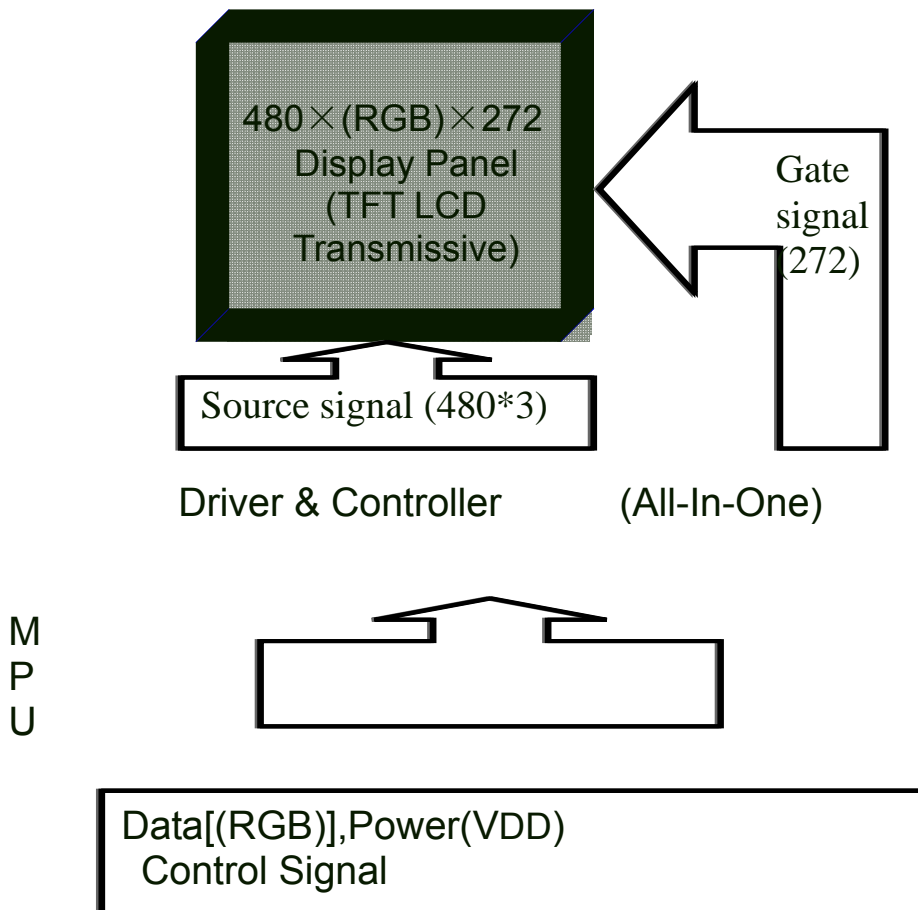
#### Absolute Maximum Ratings

The following are maximum values which, if exceeded may cause operation or damage to the unit.

| ITEM                          | Symbol          | Min. | Typ. | Max. | Unit              | Remark       |
|-------------------------------|-----------------|------|------|------|-------------------|--------------|
| Power for Circuit Driving     | VDD             |      | 3.2  |      | V                 |              |
| Power for Circuit Logic       | VCI             |      | 3.2  |      | V                 |              |
| LC Operating Voltage *1)      | Vop             |      | 3.3  |      | V                 |              |
| LED Forward Voltage           | V <sub>f</sub>  | -    | 22.4 | -    | V                 |              |
| LED Forward Current           | I <sub>r</sub>  | -    | 20   | -    | mA                |              |
| LCD Luminance                 | B <sub>p</sub>  | -    | 280  | -    | cd/m <sup>2</sup> |              |
| Storage Humidity              | H <sub>ST</sub> | 10   | -    | 90   | %RH               | At<br>25±5°C |
| Storage Temperature           | T <sub>ST</sub> | -30  | -    | 80   | °C                |              |
| Operating Ambient Humidity    | H <sub>OP</sub> | 10   | -    | 90   | %RH               |              |
| Operating Ambient temperature | T <sub>OP</sub> | -20  | -    | 70   | °C                |              |

#### 2、控制原理

#### Block Diagram





### 3、视角范围 Scope of View

| ITEM                             |       | SYMBOL | CONDITION                 | Min.  | TYP.  | Max.  |
|----------------------------------|-------|--------|---------------------------|-------|-------|-------|
| Color Filter Chromacity (Note.1) | White | x      | $\theta = \phi = 0^\circ$ | 0.287 | 0.307 | 0.327 |
|                                  |       | y      |                           | 0.321 | 0.341 | 0.361 |
|                                  |       | Y      |                           | 29.0  | 32.0  | 35.0  |
|                                  | Red   | x      | $\theta = \phi = 0^\circ$ | 0.633 | 0.653 | 0.673 |
|                                  |       | y      |                           | 0.312 | 0.332 | 0.352 |
|                                  |       | Y      |                           | 15.55 | 18.55 | 21.55 |
|                                  | Green | x      | $\theta = \phi = 0^\circ$ | 0.294 | 0.314 | 0.334 |
|                                  |       | y      |                           | 0.555 | 0.575 | 0.595 |
|                                  |       | Y      |                           | 58.71 | 61.71 | 64.71 |
|                                  | Blue  | x      | $\theta = \phi = 0^\circ$ | 0.117 | 0.137 | 0.157 |
|                                  |       | y      |                           | 0.113 | 0.133 | 0.153 |
|                                  |       | Y      |                           | 13.79 | 15.79 | 18.79 |
| Transmittance(%) (Note.3)        |       | T      | $\theta = \phi = 0^\circ$ | --    | 5     | --    |

Note.1 These items are measured by C light.

Note.2 Definition of Viewing Angle( $\theta, \psi$ ), refer to Fig.1 as below :

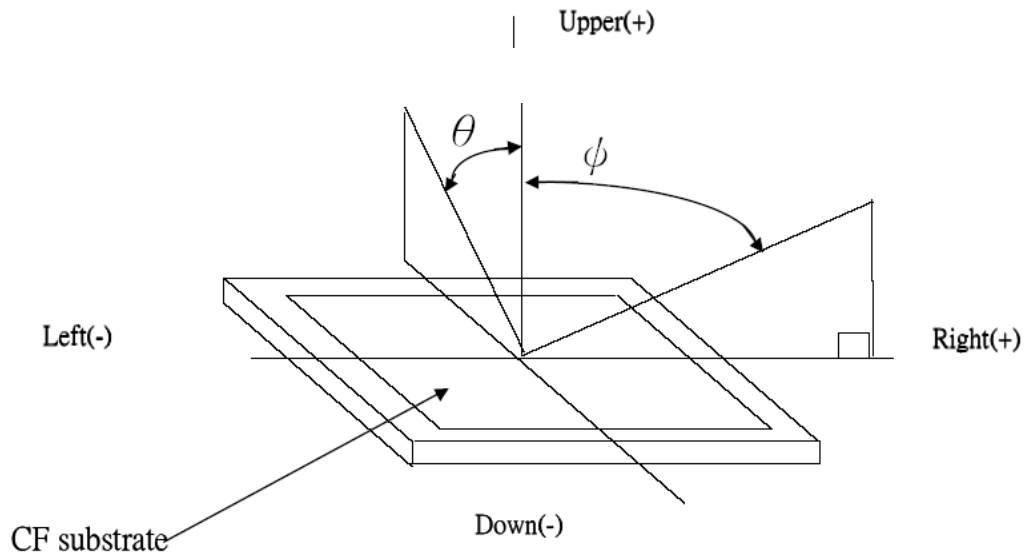


Fig.1 Definition of Viewing Angle

Note.3 Using LC+ EWV Polarizer+Corresponding Backlight, reference only, Measure device : BM-5A (TOPCON) , viewing cone=  $1^\circ$  ,  $I_L=20mA$  .



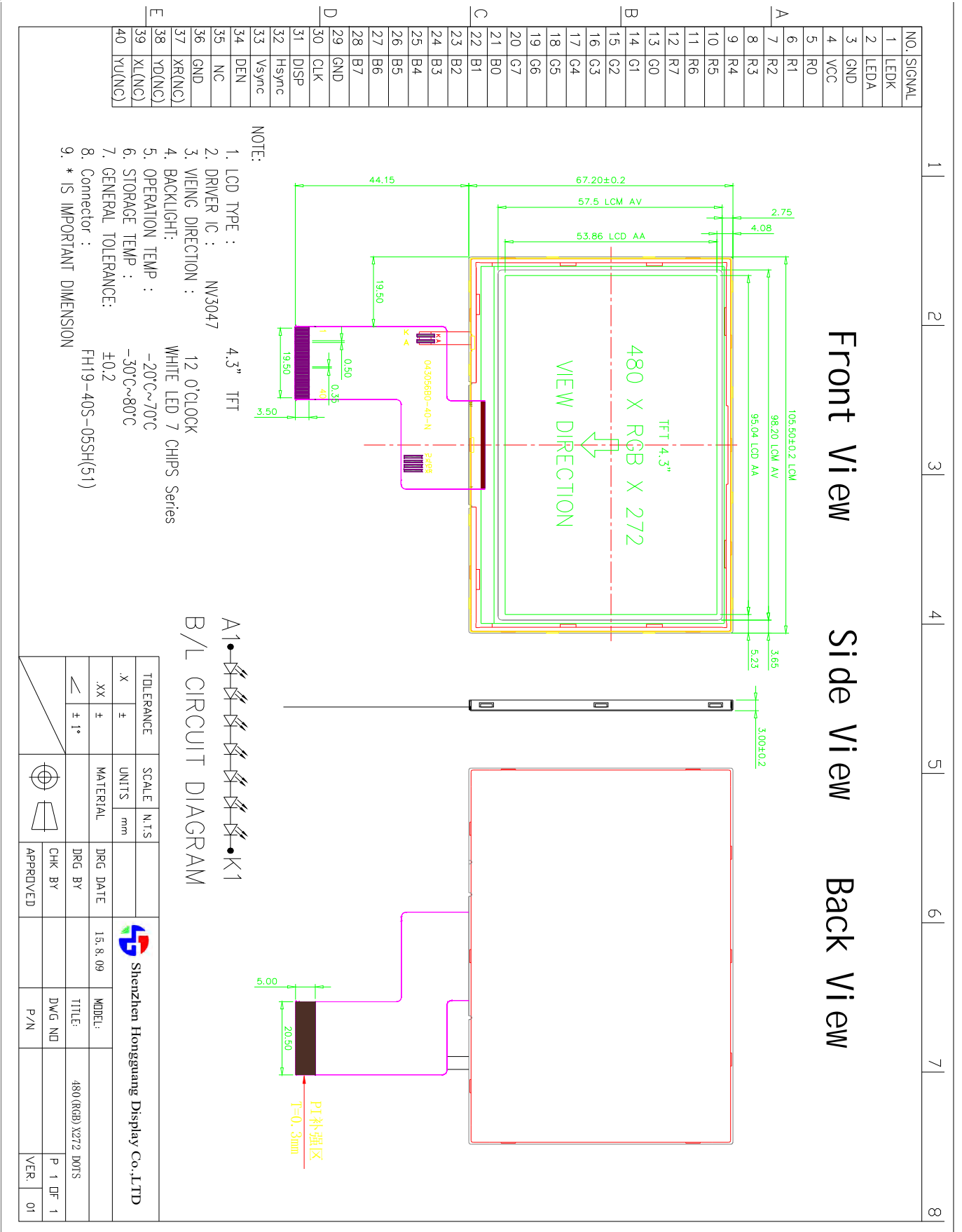
## 4、接口定义 Pin Description

| Pin NO. | Symbol | Description                       |
|---------|--------|-----------------------------------|
| 1       | LEDK   | LED BACKLIGHT(CATHODE)            |
| 2       | LEDA   | LED BACKLIGHT(ANODE)              |
| 3       | GND    | GROUND                            |
| 4       | VCC    | POWER SUPPLY                      |
| 5       | R0     | RED DATA                          |
| 6       | R1     | RED DATA                          |
| 7       | R2     | RED DATA                          |
| 8       | R3     | RED DATA                          |
| 9       | R4     | RED DATA                          |
| 10      | R5     | RED DATA                          |
| 11      | R6     | RED DATA                          |
| 12      | R7     | RED DATA                          |
| 13      | G0     | GREEN DATA                        |
| 14      | G1     | GREEN DATA                        |
| 15      | G2     | GREEN DATA                        |
| 16      | G3     | GREEN DATA                        |
| 17      | G4     | GREEN DATA                        |
| 18      | G5     | GREEN DATA                        |
| 19      | G6     | GREEN DATA                        |
| 20      | G7     | GREEN DATA                        |
| 21      | B0     | BLUE DATA                         |
| 22      | B1     | BLUE DATA                         |
| 23      | B2     | BLUE DATA                         |
| 24      | B3     | BLUE DATA                         |
| 25      | B4     | BLUE DATA                         |
| 26      | B5     | BLUE DATA                         |
| 27      | B6     | BLUE DATA                         |
| 28      | B7     | BLUE DATA                         |
| 29      | GND    | GROUND                            |
| 30      | CLK    | CLOCK SIGNAL                      |
| 31      | DISP   | DISPLAY ON/OFF                    |
| 32      | HSYNC  | HORIZONTAL SYNC INPUT IN RGB MODE |
| 33      | VSYNC  | VERTICAL SYNC INPUT IN RGB MODE   |
| 34      | DEN    | DATA ENABLE                       |
| 35      | NC     | NC                                |
| 36      | GND    | GROUND                            |
| 37      | XR(NC) | TOUCH PLANE PIN/NC                |
| 38      | YD(NC) | TOUCH PLANE PIN/NC                |
| 39      | XL(NC) | TOUCH PLANE PIN/NC                |
| 40      | YU(NC) | TOUCH PLANE PIN/NC                |



## 5、液晶屏产品结构

### LCD product structure





## 6、可靠性检测标准

### Reliability and Inspection Standard

| No. | Test Item                          | Test Conditions                                   | Remark                                       |      |
|-----|------------------------------------|---------------------------------------------------|----------------------------------------------|------|
| 1   | High Temperature                   | Storage                                           | 70°C, 120Hr                                  | Note |
|     |                                    | Operation                                         | 60°C, 120Hr                                  | Note |
| 2   | Low Temperature                    | Storage                                           | -30°C, 120Hr                                 | Note |
|     |                                    | Operation                                         | -20°C, 120Hr                                 |      |
| 3   | High Temperature and High Humidity | 60°C, 90%RH, 120Hr                                | Note                                         |      |
| 4   | Temperature Cycle                  | Storage                                           | -10°C(1Hr)→25°C(5min)→60°C(1Hr)<br>32 Cycles | Note |
|     |                                    | Operation                                         | -20°C(1Hr)→25°C(5min)→60°C(1Hr)<br>25 Cycles |      |
| 5   | Peeling Off (Storage)              | ≥ 500gf/cm                                        | Note                                         |      |
| 6   | FPC Bending Test                   | ≥ 6,000 times, 2/sec                              | Note                                         |      |
| 7   | Vibration Test(Storage)            | 50HZ, 30min,<br>Amplitude: 2 cm, X/Y/Z directions | Note                                         |      |
| 8   | Drop Test                          | 60cm/ 3Corner/ 8Face, 1Cycle                      | Note                                         |      |
| 9   | Electrostatic Discharge            | +/-200V,200pf(0ohm) 1 time/each terminal          |                                              |      |

## 三、产品驱动板

### Product Drive Board

#### 1) 接口定义

##### Interface definition

**CN1 接口定义：** 4 线引出插座（PH 规格，2.0mm 间距），用于连接电源及视频。

| 引脚 | 符号   | 定 义           |
|----|------|---------------|
| 1  | VCC  | 9V~18V 电源输入   |
| 2  | GND  | 电源地线          |
| 3  | GND  | 视频地线          |
| 4  | CVBS | PAL/NTSC 视频输入 |

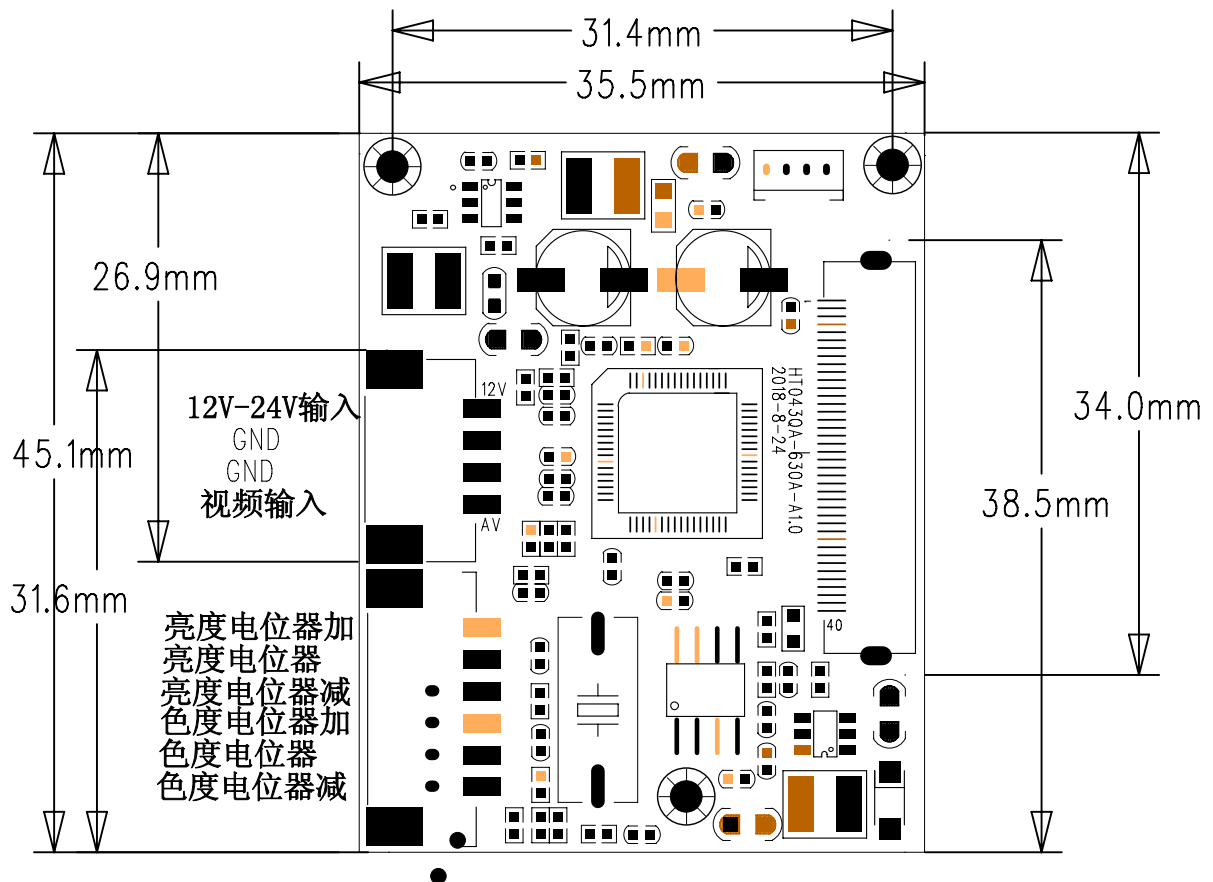


**CN2 接口定义：** 6 线插座（PH 规格, 2.0mm 间距），用于接调节电位器。

| 引脚 | 定 义    | 外接电位器阻值 |
|----|--------|---------|
| 1  | 亮度电位器加 | 10—50K  |
| 2  | 亮度电位器  |         |
| 3  | 亮度电位器减 |         |
| 4  | 色度电位器加 | 10—50K  |
| 5  | 色度电位器  |         |
| 6  | 色度电位器减 |         |

## 2) 线路板结构图

### Circuit Board Structural Diagram

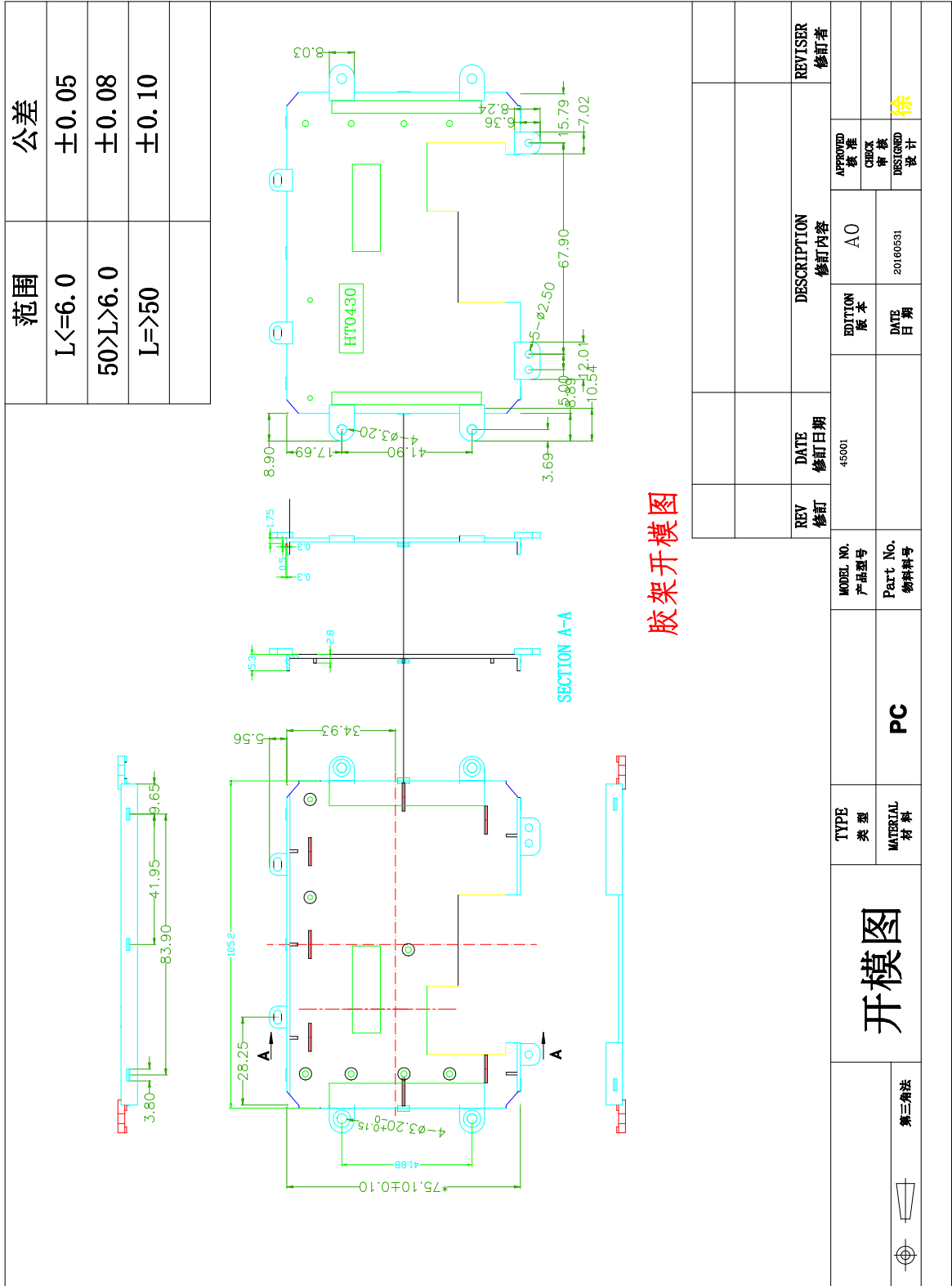






## 四、产品支架

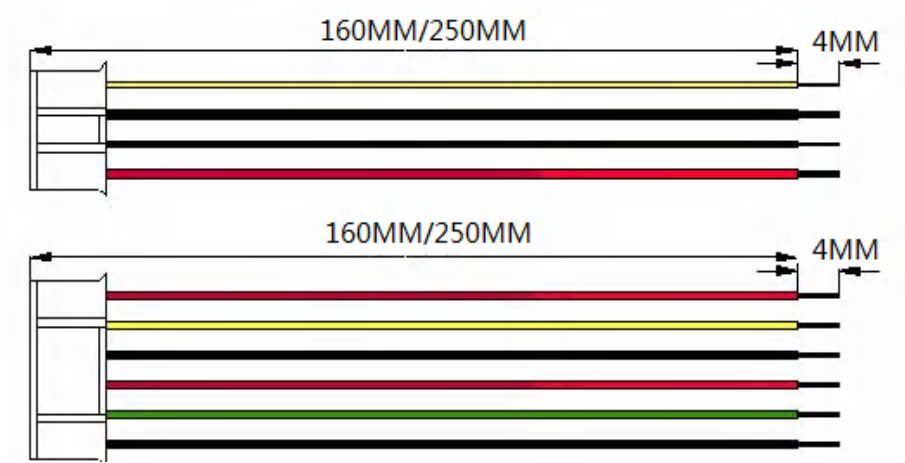
Product rubber frame





## 五、标准端子线

Standard terminal line



## 六、外观图

Appearance chart

