

# PRODUCT SPECIFICATION

MODEL NO: SEL-1552A0

< ◆ > PRELIMINARY SPECIFICATION

< ◇ > APPROVAL SPECIFICATION

|             |
|-------------|
| CUSTOMER    |
|             |
| APPROVED BY |
|             |
| DATE:       |

| DESIGNED | CHECKED | APPROVED |
|----------|---------|----------|
|          |         |          |

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## 1. GENERAL DESCRIPTION

The SEL-1552A0 model is a Color TFT LCD supplied by Selectronic. This main Module has a 10.4 inch diagonally measured active display area with 1024 X RGB X 100 resolutions. Each pixel is divided into Red, Green and Blue sub-pixels and dots that are arranged in vertical stripes. LCD color is determined with Dithering 65K Color signal for each pixel. The SEL-1552A0 has been designed to apply the interface method that enables low power, high speed, and high contrast.

## 2. FEATURES

|                   |   |
|-------------------|---|
| Display Mode      | Transmissive Type                       |
|                   | a-Si color TFT LCD, Normally white type |
| Screen Size       | 10.4 inch                               |
| Display Format    | Graphic 1024*RGB*100 Stripe type        |
| Color             | 65K color                               |
| Interface         | RGB IF(16 bit)                          |
| Driver IC         | HX8282-A*1, HX8678-C*1                  |
| Viewing Direction | 6 o'clock (Gray inversion: 12 o'clock)  |
| Weight            | 103.96 g                                |

## 3. MECHANICAL SPECIFICATION

| Item                | Specifications             | Unit |
|---------------------|----------------------------|------|
| Dimensional outline | 288.92(W)×41.5(H)*×6.32(D) | mm   |
| Resolution          | 1024×(R, G, B)×100         | dot  |
| Active area         | 264.192(W)×25.8(H)         | mm   |
| Pixel pitch         | 0.258(W)×0.258(H)          | mm   |
| Polarizer           | Anti-Glare                 |      |

Note: Without FPC

## 4. MECHANICAL DIMENSION

[illegible]

## 5. MAXIMUM RATINGS

If the operating condition exceeds the following absolute maximum ratings, the TFT LCD module may be damaged permanently.

| Item                  | Symbol           | Values |      | Unit | Condition |
|-----------------------|------------------|--------|------|------|-----------|
|                       |                  | Min.   | Max. |      |           |
| Operation Temperature | T <sub>op</sub>  | 0      | 50   | °C   |           |
| Storage Temperature   | T <sub>stg</sub> | -10    | 60   | °C   |           |
| Humidity              | H <sub>stg</sub> | -      | 90   | %RH  | Note1     |

Note1: T<sub>A</sub> ≤ 40°C Without dewing

## 6. ELECTRICAL CHARACTERISTIC

### 6.1.TFT LCD Characteristic

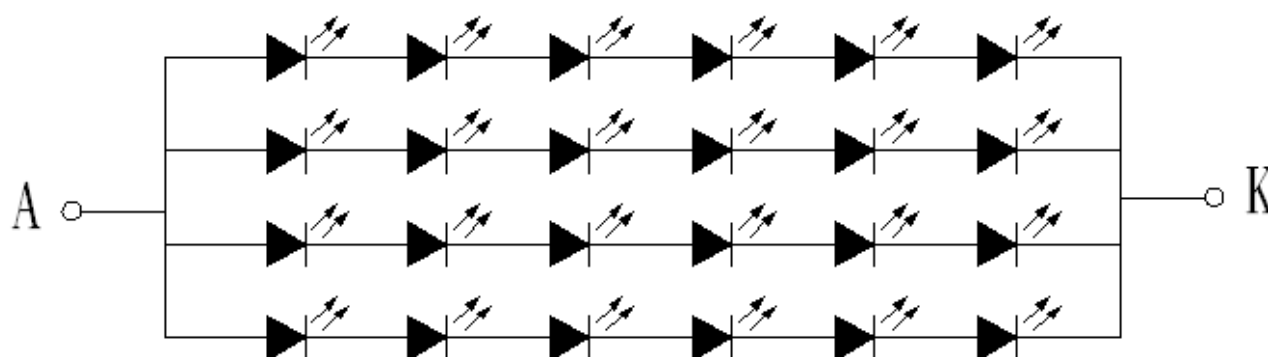
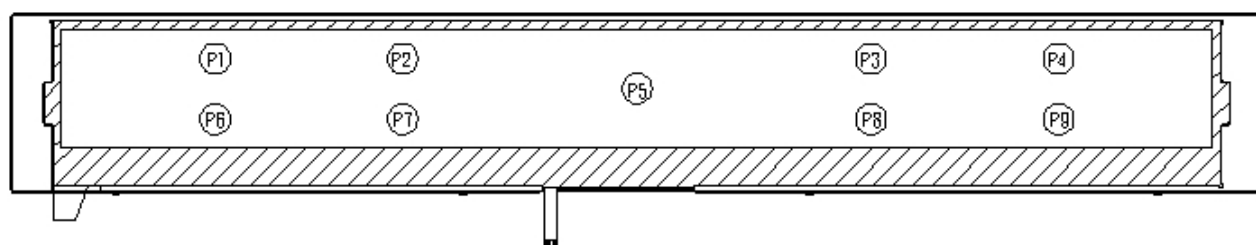
Typical operating conditions

(GND=AVSS=0V)

| Item                        |         | Symbol          | Min.    | Typ. | Max.    | Unit | Note |
|-----------------------------|---------|-----------------|---------|------|---------|------|------|
| Power supply for LCD        | Voltage | VDD             | 3.0     | 3.2  | 3.4     | V    |      |
|                             | Current | I <sub>dd</sub> | -       | -    | 65      | mA   |      |
| Driver Input signal voltage | H       | V <sub>IH</sub> | 0.7*VDD | -    | VDD     | V    |      |
|                             | L       | V <sub>IL</sub> | 0       | -    | 0.3*VDD | V    |      |

## 6.2.Backlight Characteristic

| Item                 | Symbol    | Values |      |      | Unit | Remark |
|----------------------|-----------|--------|------|------|------|--------|
|                      |           | Min.   | Typ. | Max. |      |        |
| Power Consumption    | $P_{LED}$ | -      | -    | 1728 | mW   |        |
| Power supply for LED | Voltage   | 15.6   | -    | 21.6 | V    |        |
|                      | Current   | -      | 80   | -    | mA   |        |
| Luminous color       | White     |        |      |      |      |        |



**LED circuit diagram**

- Test Instrument: BM-7 (Distance =500mm; Field = 1°)
- Light Source: White LED \* 24
- Uniformity = (Min. Brightness / Max. Brightness)\*100%
- Uniformity  $\geq 70\%$
- The “LED decay life time” is defined as the brightness decrease to 50% original Brightness that the ambient temperature is 22°C and LED dice current=20mA.

## 7. MODULE FUNCTION DESCRIPTION

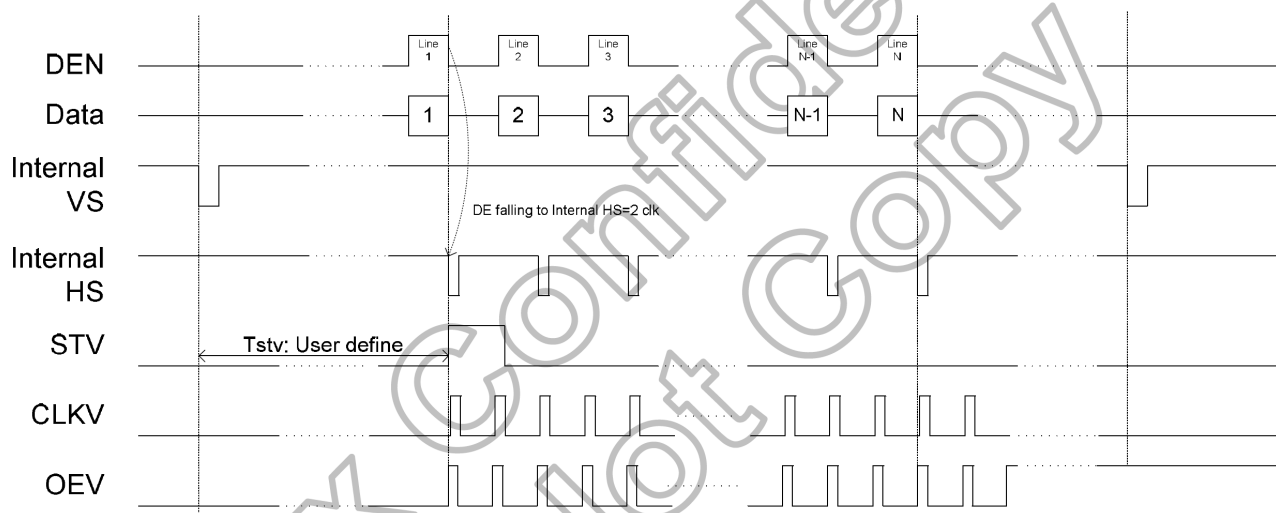
### 7.1.PIN Description

| NO. | Pin Name | Functions              | Remark |
|-----|----------|------------------------|--------|
| 1   | VDD      | Power supply           |        |
| 2   | VSS      | Ground                 |        |
| 3   | B0       | Blue data              |        |
| 4   | B1       | Blue data              |        |
| 5   | B2       | Blue data              |        |
| 6   | B3       | Blue data              |        |
| 7   | B4       | Blue data              |        |
| 8   | VSS      | Ground                 |        |
| 9   | G0       | Green data             |        |
| 10  | G1       | Green data             |        |
| 11  | G2       | Green data             |        |
| 12  | G3       | Green data             |        |
| 13  | G4       | Green data             |        |
| 14  | G5       | Green data             |        |
| 15  | VSS      | Ground                 |        |
| 16  | R0       | Red data               |        |
| 17  | R1       | Red data               |        |
| 18  | R2       | Red data               |        |
| 19  | R3       | Red data               |        |
| 20  | R4       | Red data               |        |
| 21  | VSS      | Ground                 |        |
| 22  | DCLK     | Clock signal           |        |
| 23  | VSS      | Ground                 |        |
| 24  | HSYNC    | Horizontal sync signal |        |
| 25  | VSS      | Ground                 |        |
| 26  | VSNC     | Vertical sync signal   |        |
| 27  | VSS      | Ground                 |        |
| 28  | DE       | Data enable            |        |
| 29  | LED_K    | Cathode, Backlight LED |        |
| 30  | LED_A    | Anode, Backlight LED   |        |

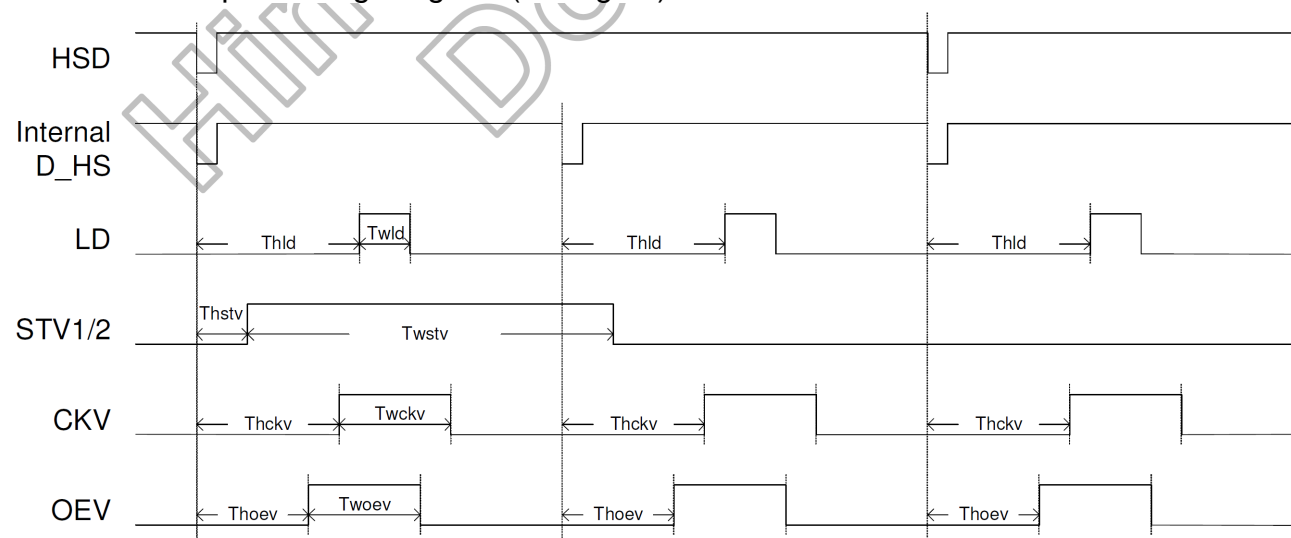


## 7.2. Timing Characteristics

### 7.2.1 Vertical Timing Diagram DE (Dual gate)

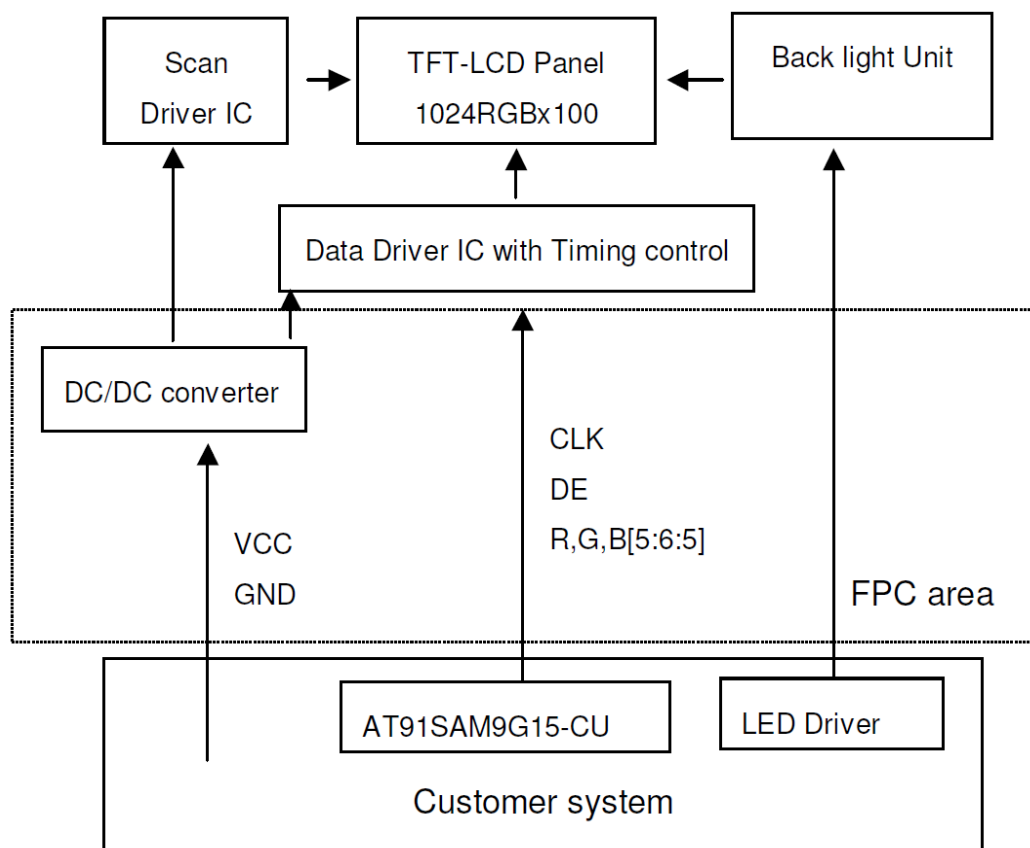


### 7.2.2 Gate Output Timing Diagram (Dual gate)



| Parameter               | Symbol     | 1024*RGB*130 |      |      | Unit           |
|-------------------------|------------|--------------|------|------|----------------|
|                         |            | Spec.        |      |      |                |
|                         |            | Min.         | Typ. | Max. |                |
| DCLK Frequency          | fclk       |              | 25   |      | MHz            |
| Horizontal Display Area | thd        | 1024         |      |      | D CLK          |
| HSD Period              | th         |              | 1344 |      | D CLK          |
| HSD Blanking            | thb+ thfp  |              | 320  |      | D CLK          |
| Vertical Display Area   | tvd        | 130          |      |      | T <sub>H</sub> |
| VSD Period              | tv         |              | 310  |      | T <sub>H</sub> |
| VSD Blanking            | tvbp+ tvfp |              | 180  |      | T <sub>H</sub> |

### 7.3. Block Diagram



## 8. ELECTRO-OPTICAL CHARACTERISTICS

### 8.1. Optical characteristics

The following items are measured under stable conditions. The optical characteristics should be measured in dark room or equivalent state with the methods shown in Note 1.

LED backlight transmissive module:

| Item                          | Symbol | Temp. | Min.        | Typ. | Max. | Unit  | Conditions  |
|-------------------------------|--------|-------|-------------|------|------|-------|---|
| Response time                 | Tr+ Tf | 25°C  | -           | 25   | 50   | ms    | $\theta = 0^\circ$ , $\psi = 0^\circ$<br>(Note 2)                     |
| Contrast ratio                | CR     | 25°C  | 200         | 300  | -    | -     | $\theta = 0^\circ$ , $\psi = 0^\circ$<br>LED:ON,LIGHT:OFF<br>(Note 3) |
| Brightness                    | L      |       | 570         | 690  | -    | cd/m2 |   |
| Viewing Angle<br>12"/6"/9"/3" | Degree |       | 60/50/60/60 |      |      |       | (Note 5)<br>$CR \geq 10$  |

### 8.2. CIE(x, y) chromaticity

| Parameter                |       | Symbol | Min.  | Typ.  | Max.  | Units | Note                         |
|--------------------------|-------|--------|-------|-------|-------|-------|------------------------------|
| CIE color<br>Coordinates | White | Wx     | 0.287 | 0.337 | 0.387 | -     | BM5;<br>1° angle<br>(Note 4) |
|                          |       | Wy     | 0.298 | 0.348 | 0.398 |       |                              |
|                          | Red   | Rx     | 0.528 | 0.578 | 0.628 |       |                              |
|                          |       | Ry     | 0.283 | 0.333 | 0.383 |       |                              |
|                          | Green | Gx     | 0.343 | 0.393 | 0.443 |       |                              |
|                          |       | Gy     | 0.493 | 0.543 | 0.593 |       |                              |
|                          | Blue  | Bx     | 0.108 | 0.158 | 0.208 |       |                              |
|                          |       | By     | 0.092 | 0.142 | 0.192 |       |                              |
|                          | NTSC  | 39     |       |       |       | %     |                              |

\*Note 1: C light source, for panel only.

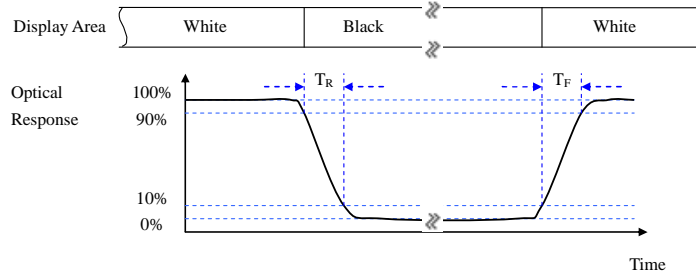
Note:

#### 1. Test equipment setup

After stabilizing and leaving the panel alone at a given temperature for 30 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-5A with a viewing angle of 1° at a distance of 50cm and normal direction.

## 2. Definition of response time: $T_R$ and $T_F$

The figure below is the output signal of the photo detector.



## 3. Definition of contrast ratio:

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness measured when LCD is at "white state"}}{\text{Brightness measured when LCD is at "black state"}}$$

White  $V_i = V_{i50\%} \pm 1.5V$

Black  $V_i = V_{i50\%} \mp 2.0V$

" $\pm$ " means that the analog input signal swings in phase with VCOM signal.

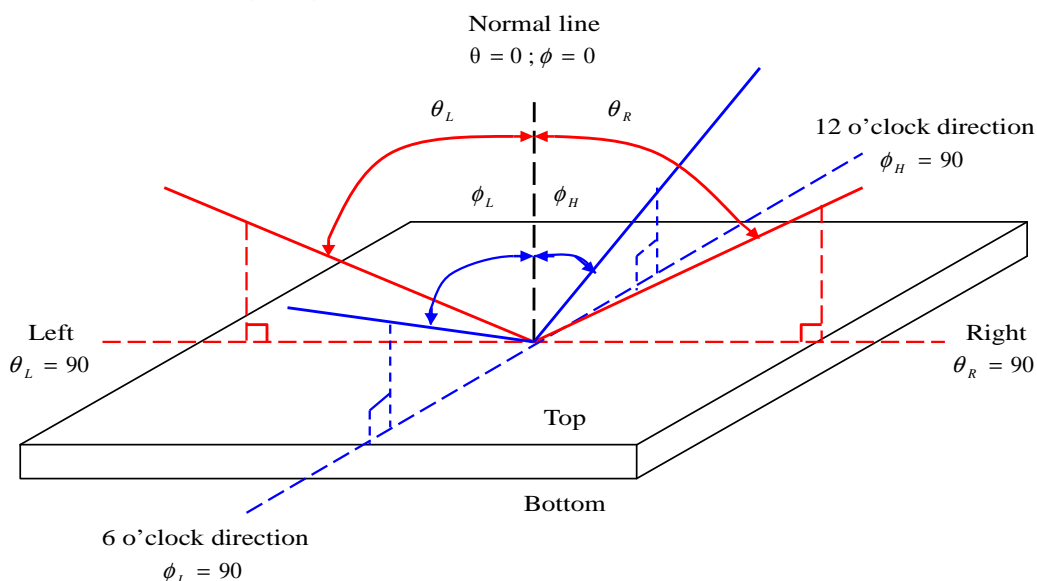
" $\mp$ " means that the analog input signal swings out of phase with VCOM signal.

$V_{i50\%}$ : The analog input voltage when transmission is 50%.

The 100% transmission is defined as the transmission of LCD panel when all the input terminals of module are electrically opened.

## 4. Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

## 5. Definition of viewing angle:



## 9. RELIABILITY

### 9.1. TESTS

| NO. | ITEM                                     | CONDITION   | CRITERION  |
|-----|--|---|--|
| 1   | High Temperature Operating               | 50°C 240 hrs  | <ul style="list-style-type: none"> <li>No defect of operational function in room temperature are allowable(23±5°C).</li> <li>Leakage current should be below double of initial value.</li> </ul> |
| 2   | Low Temperature Operating                | 0°C 240 hrs   |  |
| 3   | High Temperature Non-Operating           | 60°C 240 hrs  |  |
| 4   | Low Temperature Non-Operating            | -10°C 240 hrs   |  |
| 5   | High Temperature/ Humidity Non-Operating | 50°C; 90%RH; 240 hrs  |  |
| 6   | Temperature Shock Non-Operating          | -20°C (60min) $\longleftrightarrow$ (5min) 70°C (60min)<br>10CYCLES |  |
| 7   | Electro-static Discharge                 | HBM: ±2kv   |  |

Note 1: Test after 24 hours in room temperature.

Note 2: The sampling above is individually for each reliability testing condition.

Note 3: The color fading of polarizing filter should not care.

Note 4: All of the reliability testing chamber above, is using D.I. water.(Min value:1.0 MΩ-cm)

Note 5: In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.

### 9.2. Color performance

| No. | ITEM           | Criterion (initial) |
|-----|----------------|---------------------|
| 1   | Luminance      | >50%                |
| 2   | NTSC           | >70%                |
| 3   | Contrast Ratio | >50%                |

## 10.INSPECTION CRITERIA

### 10.1.Inspection Conditions

#### 10.1.1.Environmental conditions

The environmental conditions for inspection shall be as follows

Room temperature:  $23\pm5^{\circ}\text{C}$

Humidity:  $50\pm20\%\text{RH}$

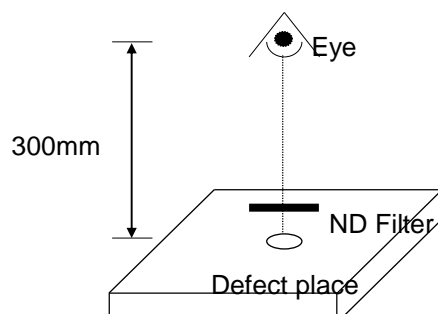
#### 10.1.2.The external visual inspection

With a single  $1000\pm200\text{lux}$  fluorescent lamp as the light source, the inspection was in the distance of 30cm or more from the LCD to the inspector's eyes.

### 10.2.Light Method

10.2.1.Environment lamp under  $1000 \pm 200 \text{ lux}$ , Viewing direction for inspection over  
30 cm

10.2.2.The distance from eye to defect around 300mm, the distance from ND Filter to  
defect around 25~30mm



## 10.3. Classification Of Defects

### 10.3.1. Major defect

A major defect refers to a defect that may substantially degrade usability for product applications.

### 10.3.2. Minor defect

A minor defect refers to a defect which is not considered to be able substantially degrade the product application or a defect that deviates from existing standards almost unrelated to the effective use of the product or its operation.

Notes: If the LCD/LCM 's cosmetic and display performance do not specify in "inspection criterion", it should be based on these delivered samples.

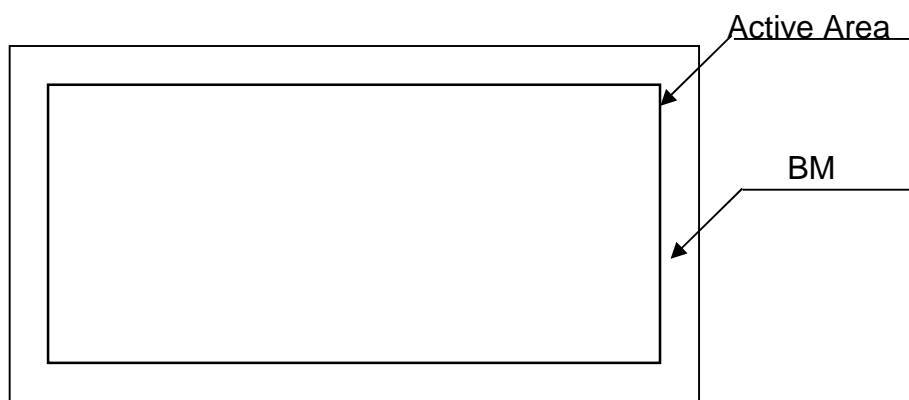
## 10.4. Sampling & Acceptable Quality Level

Level II, MIL-STD-105E

|                    | Major | Minor  |
|--------------------|-------|--------|
| Cosmetic           | 1.0 % | 1.5 %  |
| Electrical-display | 0.4%  | 0.65 % |

## 10.5. Definition Of Inspection Area

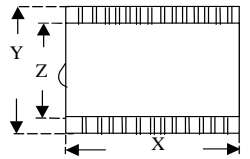
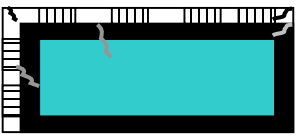
A.A: Active Area



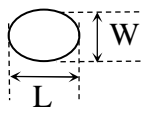
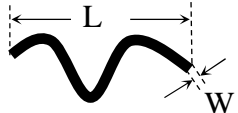

## 10.6.Items and Criteria

### 10.6.1.Visual inspection criterion in cosmetic

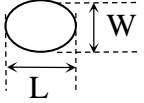
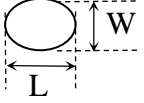
#### (1) Glass defect

| No | Defect               | Criteria                 | Remark  |
|----|----------------------|--------------------------|---|
| 1  | Dimension<br>(Major) | By engineering diagram   |  |
| 2  | Cracks<br>(Major)    | Extensive crack 【Reject】 |  |

#### (2) LCM appearance defect

| No | Defect                | Criteria  |                  | Remark   |
|----|-----------------------|---|------------------|--|
| 1  | Round type<br>(Minor) | Spec.   | Permissible Q'ty | 1. $\phi = (L+W)/2$ ,<br>L: Length, W: Width<br>2. Disregard if out of A.A.<br> |
|    |                       | $\phi < 0.30\text{mm}$  | Disregard        |  |
|    |                       | $0.30\text{mm} \leq \phi \leq 0.6\text{mm}$                     | 6                |  |
|    |                       | $0.6\text{mm} < \phi$   | 0                |  |
| 2  | Scratch<br>(Minor)    | Spec.   | Permissible Q'ty | 1.L: Length, W: Width<br>2. Disregard if out of A.A.<br>                        |
|    |                       | $W \leq 0.05\text{mm}$ and $L \leq 15\text{mm}$                 | Disregard        |  |
|    |                       | $0.05\text{mm} < W \leq 0.15\text{mm}$ and $L \leq 15\text{mm}$ | 6                |  |
|    |                       | $W > 0.15\text{mm}$ or $L > 15\text{mm}$                        | 0                |  |
| 3  | Fiber<br>(Minor)      | Spec.   | Permissible Q'ty | 1.L: Length, W: Width<br>2. Disregard if out of A.A.<br>                        |
|    |                       | $W \leq 2.0\text{mm}$ and $L \leq 2.0\text{mm}$                 | 6                |  |
|    |                       | $W > 2.0\text{mm}$ or $L > 2.0\text{mm}$                        | 0                |  |
|    |                       |   |                  |  |



|   |                             |   |                  |  |
|---|-----------------------------|---|------------------|--|
| 4 | Polarizer Bubble<br>(Minor) | Spec.                                       | Permissible Q'ty | 1. $\phi = (L+W)/2$ ,<br>L: Length, W: Width<br>2. Disregard if out of A.A.<br> |
|   |                             | $\phi < 0.35\text{mm}$                      | Disregard        |  |
|   |                             | $0.35\text{mm} \leq \phi \leq 0.6\text{mm}$ | 5                |  |
|   |                             | $0.6\text{mm} < \phi$                       | 0                |  |
| 5 | Polarizer Dent<br>(Minor)   | Spec.                                       | Permissible Q'ty | 1. $\phi = (L+W)/2$ ,<br>L: Length, W: Width<br>2. Disregard if out of A.A.<br> |
|   |                             | $\phi < 0.35\text{mm}$                      | Disregard        |  |
|   |                             | $0.35\text{mm} \leq \phi \leq 0.6\text{mm}$ | 5                |  |
|   |                             | $0.6\text{mm} < \phi$                       | 0                |  |

(3) FPC

| No | Defect                    | Criteria                         | Remark |
|----|---------------------------|----------------------------------|--------|
| 1  | Copper peeling<br>(Minor) | Copper peeling <b>【 Reject 】</b> |        |

(4) Black tape

| No | Defect                   | Criteria                        | Remark |
|----|--------------------------|---------------------------------|--------|
| 1  | Shift<br>(Minor)         | IC exposed <b>【 Reject 】</b>    |        |
| 2  | No black tape<br>(Minor) | No black tape <b>【 Reject 】</b> |        |

(5) Silicon

| No | Defect                       | Criteria                      | Remark |
|----|------------------------------|-------------------------------|--------|
| 1  | Amount of silicon<br>(Minor) | ITO exposed <b>【 Reject 】</b> |        |


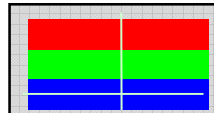

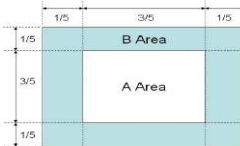
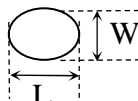
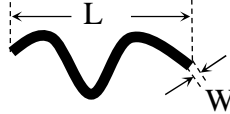
(6) Bezel

| No | Defect                         | Criteria                              | Remark                     |
|----|--------------------------------|---------------------------------------|----------------------------|
| 1  | Oxidized spot<br>(Minor)       | Oxidized spot, rust <b>【 Reject 】</b> |                            |
| 2  | Outline deformation<br>(Minor) | By engineering diagram                |                            |
| 3  | Greasiness<br>(Minor)          | Greasiness <b>【 Reject 】</b>          |                            |
| 4  | Spots, round Type              | $H \leq$ By engineering diagram       | H=Total height (thickness) |


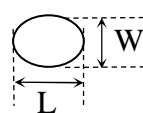
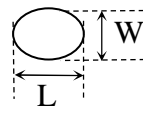
|   |                    |                                      |  |
|---|--------------------|--------------------------------------|--|
|   | (Minor)            | <b>【 Disregard 】</b>                 |  |
| 5 | Plating<br>(Minor) | Bubble, peeling<br><b>【 Reject 】</b> |  |

## 10.6.2.LCM electrical criterion

### (1).LCM electrical criterion

| 7) LOW electrical enclosure |                                   |   |        |                  |       |   |
|-----------------------------|-----------------------------------|---|--------|------------------|-------|---|
| No                          | Defect                            | Criteria  |        |                  |       | Remark  |
| 1                           | No display<br>(Major)             | Not allowed   |        |                  |       |    |
| 2                           | Missing line<br>(Major)           | Not allowed   |        |                  |       |    |
| 3                           | Darker or lighter line<br>(Major) | Not allowed   |        |                  |       |    |
| 4                           | Bright / Dark point<br>(Minor)    |   | A Area | B Area           | Total | 1.1sub-pixel: 1R or 1G or 1B 2.Point defect area $\geq 1/2$ sub pixel.<br>     |
|                             |                                   | Bright point  | 1      | 2                | 3     |   |
|                             |                                   | Dark dot point  | 3      | 4                | 5     |   |
|                             |                                   | Bright +Dark point  | 4      | 5                | 6     |   |
| 5                           | Round type<br>(Minor)             | Spec.   |        | Permissible Q'ty |       | 1. $\phi =(L+W)/2$ ,<br>L: Length, W: Width<br>2. Disregard if out of A.A.<br> |
|                             |                                   | $\phi < 0.30\text{mm}$  |        | Disregard        |       |   |
|                             |                                   | $0.30\text{mm} \leq \phi \leq 0.6\text{mm}$                     |        | 6                |       |   |
|                             |                                   | $0.6\text{mm} < \phi$   |        | 0                |       |   |
| 6                           | Scratch<br>(Minor)                | Spec.   |        | Permissible Q'ty |       | 1.L: Length, W: Width<br>2. Disregard if out of A.A.<br>                       |
|                             |                                   | $W \leq 0.05\text{mm}$ and $L \leq 15\text{mm}$                 |        | Disregard        |       |   |
|                             |                                   | $0.05\text{mm} < W \leq 0.15\text{mm}$ and $L \leq 15\text{mm}$ |        | 6                |       |   |
|                             |                                   | $W > 0.15\text{mm}$ or $L > 15\text{mm}$                        |        | 0                |       |   |

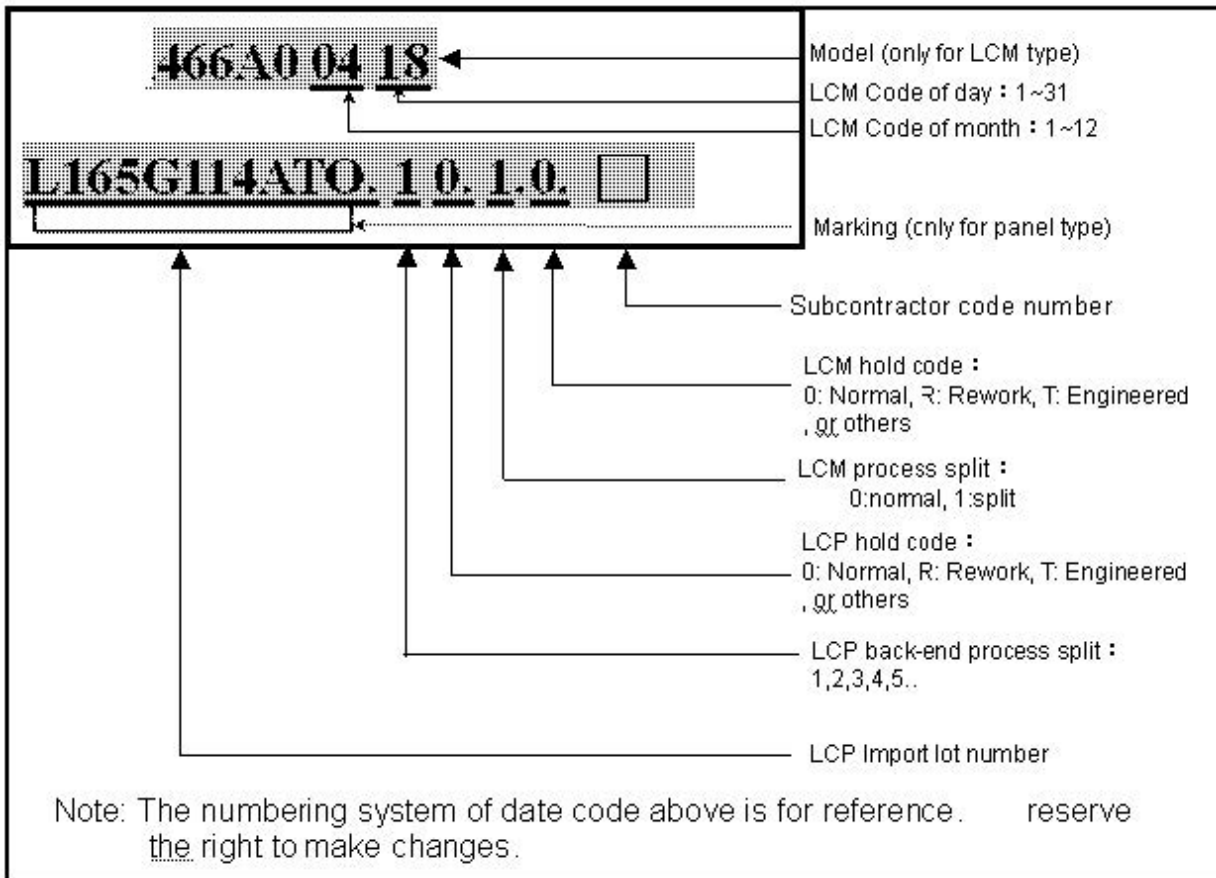
|   |       |       |                  |                       |
|---|-------|-------|------------------|-----------------------|
| 7 | Fiber | Spec. | Permissible Q'ty | 1.L: Length, W: Width |
|---|-------|-------|------------------|-----------------------|

|    |                             |   |                  |   |
|----|-----------------------------|---|------------------|---|
|    |                             | $W \leq 2.0\text{mm}$ and $L \leq 2.0\text{mm}$ | 6                | 2. Disregard if out of A.A.   |
|    | (Minor)                     | $W > 2.0\text{mm}$ or $L > 2.0\text{mm}$        | 0                |    |
| 8  | Polarizer Bubble<br>(Minor) | Spec.   | Permissible Q'ty | 1. $\phi = (L+W)/2$ ,<br>L: Length, W: Width<br>2. Disregard if out of A.A.           |
|    |                             | $\phi < 0.35\text{mm}$                          | Disregard        |    |
|    |                             | $0.35\text{mm} \leq \phi \leq 0.6\text{mm}$     | 5                |   |
|    |                             | $0.6\text{mm} < \phi$                           | 0                |   |
| 9  | Polarizer Dent<br>(Minor)   | Spec.   | Permissible Q'ty | 1. $\phi = (L+W)/2$ ,<br>L: Length, W: Width<br>2. Disregard if out of A.A.           |
|    |                             | $\phi < 0.35\text{mm}$                          | Disregard        |  |
|    |                             | $0.35\text{mm} \leq \phi \leq 0.6\text{mm}$     | 5                |   |
|    |                             | $0.6\text{mm} < \phi$                           | 0                |   |
| 10 | Mura<br>(Minor)             | By 2% ND filter invisible                       |                  |   |

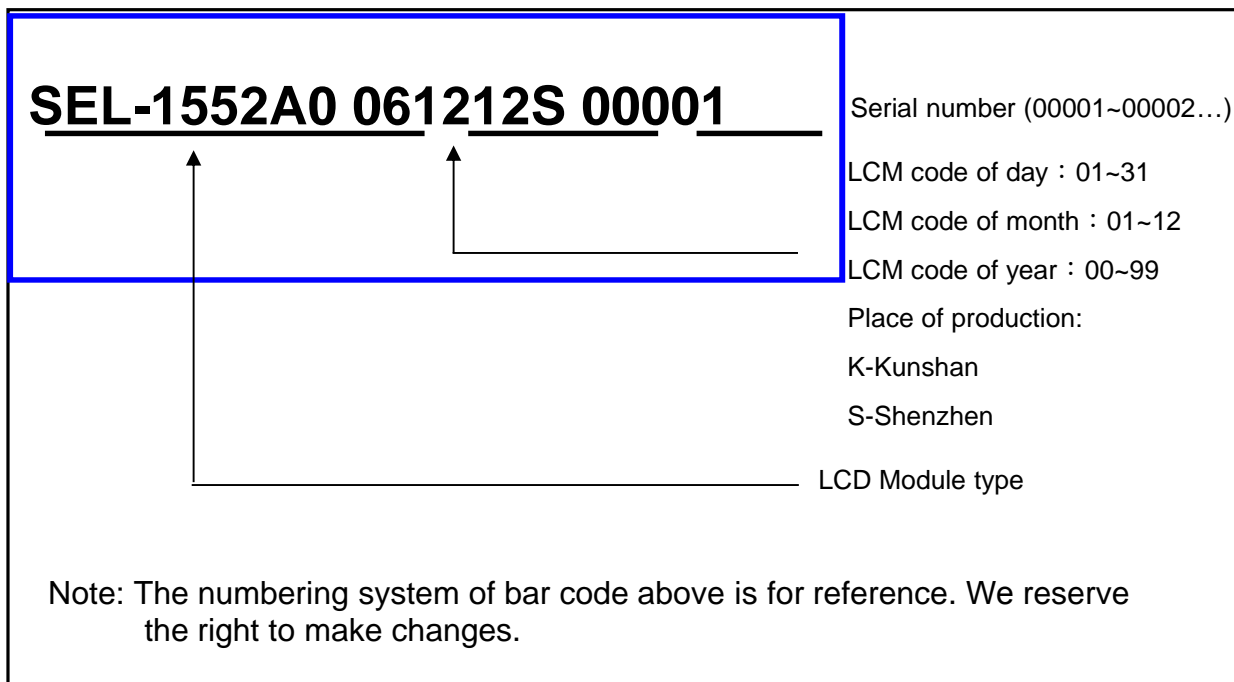
#### 10.6.3.Others

1. Issues that are not defined in this document shall be discussed and agreed with both parties. (Customer and supplier)
2. Unless otherwise agreed upon in writing, the criteria shall be applied to both parties. (Customer and supplier)
3. Polarizer, more than 0.5mm in size reduction rejected.

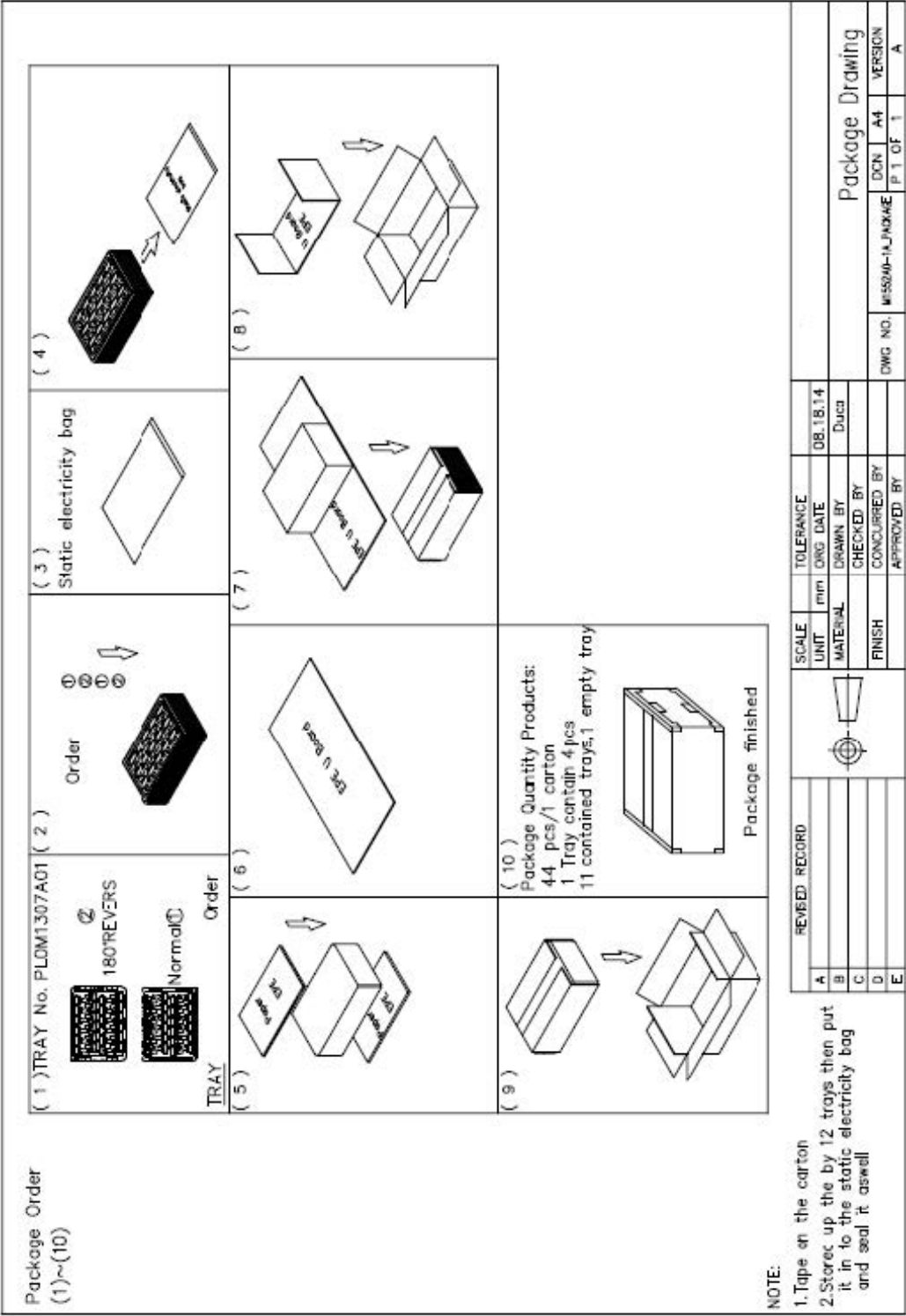
## 11.ILLUSTRATION OF LCD DATE CODE



## 12. ILLUSTRATION OF LCD BAR CODE



13.PACKAGE DRAWING



## 14. RoHS COMPLIANT WARRANTY

RoHS Hazardous substances including:

- Cd < 100 ppm
- Pb < 1000 ppm
- Hg < 1000 ppm
- Cr +6 < 1000 ppm
- PBDE < 1000 ppm
- PBB < 1000 ppm

## 15. PRECAUTIONS FOR USE

### 15.1. Safety

- (1) Do not swallow any liquid crystal, even if there is no proof that liquid crystal is poisonous.
- (2) If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
- (3) If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

### 15.2. Storage Conditions

- (1) Store the panel or module in a dark place where the temperature is  $23\pm5^{\circ}\text{C}$  and the humidity is below  $50\pm20\%\text{RH}$ .
- (2) Store in anti-static electricity container.
- (3) Store in clean environment, free from dust, active gas, and solvent.
- (4) Do not place the module near organics solvents or corrosive gases.
- (5) Do not crush, shake, or jolt the module.
- (6) Do not exposed to direct sun light of fluorescent lamps.

### 15.3. Installing LCD Module

Attend to the following items when installing the LCM.

- (1) Cover the surface with a transparent protective plate or touch panel to protect the polarizer and LC cell.
- (2) When assembling the LCM into other equipment, the spacer to the bit between the LCM and the fitting plate should have enough height to avoid causing stress to the module surface, refer to the individual specifications for measurements. The measurement tolerance should be  $\pm 0.1\text{mm}$ .

## 15.4. Precautions For Operation

- (1) Viewing angle varies with the change of liquid crystal driving voltage ( $V_o$ ). Adjust  $V_o$  to show the best contrast.
- (2) Driving the LCD in the voltage above the limit will shorten its lifetime.
- (3) Response time is greatly delayed at temperature below the operating temperature range. However, this does not mean the LCD will be out of the order. It will recover when it returns to the specified temperature range.
- (4) When turning the power on, input each signal after the positive/negative voltage becomes stable.
- (5) Do not apply water or any liquid on product which composed of T/P.

## 15.5. Handling Precautions

- (1) Avoid static electricity which can damage the CMOS LSI; please wear the wrist strap when handling.
- (2) The polarizing plate of the display is very fragile. so, please handle it very carefully.
- (3) Do not give external shock.
- (4) Do not apply excessive force on the surface; it may cause display abnormal .
- (5) Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
- (6) Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
- (7) Do not operate it above the absolute maximum rating.
- (8) Do not remove the panel or frame from the module.
- (9) Do not apply water or any liquid on product, which composed of T/P.

## 15.6. Warranty

- (1) The period is within 12 months since the date of shipping out under normal using and storage conditions.
- (2) The warranty will be avoided in case of defect induced by customer.



## 16. REVISION HISTORY

| Version | Revise record  | Date       |
|---------|--|------------|
| A       | New version  | 2014/11/4  |
| B       | The luminance increase to 500 nits, and update Backlight Characteristic condition. | 2016/01/07 |
|         |  |            |
|         |  |            |
|         |  |            |