

**F215PET-Z21**

|            |                                                  |
|------------|--------------------------------------------------|
| Title      | 21.5-inches Touch Display Product Specifications |
| Model Name | F215PET-Z21                                      |
| Version    | 0                                                |

|                                                                 |       |
|-----------------------------------------------------------------|-------|
| Customer                                                        |       |
| <hr/>                                                           |       |
| Approved by                                                     | Date  |
| <hr/>                                                           | <hr/> |
| Notice: This Specification is subject to change without notice. |       |

|                        |                          |
|------------------------|--------------------------|
| Approved By            | Prepared By              |
| ZOE NIEN<br>2026-05-25 | ALLEN FANG<br>2026-05-25 |



**REVISION HISTORY**

| Version | ECN No. | Description of Changes            | Date       | Prepared   |
|---------|---------|-----------------------------------|------------|------------|
| 0       |         | Draft specification first edition | 2026-05-25 | Allen Fang |
|         |         |                                   |            |            |
|         |         |                                   |            |            |
|         |         |                                   |            |            |
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### 1. GENERAL DESCRIPTION

#### 1.1. INTRODUCTION

F215PET-Z21 is a 21.5" wide color AHVA (IPS-Like) TFT LCD module G215HAN01.5 01 with projected capacitive multi-touch B215PBU-E08 air bonding, with touch driver ETP-MB-EXC84H5680STAG.

The display format is intended to support the FHD mode (1920(H) x 1080(V)) screen and 2 channel 30 pins LVDS interface, 16.7M colors, with white LEDs backlight.

#### 1.2. FEATURES

- FHD (1920x1080) resolution
- LVDS interface with 2 pixel / clock
- 8-bit color depth, display 16.7M colors
- DE (Data Enable) only
- RoHS product

#### 1.3. APPLICATION

- Desktop Type of PC & Workstation Use
- Slim-Size Display for Stand-alone Monitor
- Display Terminals for Control System
- Monitors for Process Controller



### 2. GENERAL SPECIFICATIONS

| Parameter               | Specification                                                                  | Unit   | Remarks    |
|-------------------------|--------------------------------------------------------------------------------|--------|------------|
| Active Area Size        | 21.5                                                                           | inch   |            |
| Display Area            | 476.064(H) x 267.786(V)                                                        | mm     |            |
| Outline Dimension       | 497.60 (H) x 292.20 (V) x 14.40 (D)                                            | mm     | D:PCAP+LCM |
| Weight                  | 2440                                                                           | g      | Typ.       |
| Driver Element          | a-Si TFT active matrix                                                         | -      |            |
| Display Colors          | 16,7M (RGB 8-bits)                                                             | Colors |            |
| Electrical Interface    | 2-ch LVDS                                                                      | -      |            |
| Number of Pixels        | 1920 (H) x 1080 (V)                                                            | pixels |            |
| Pixel Pitch             | 0.24795 (H) x 0.24795 (W)                                                      | mm     |            |
| Pixel Arrangement       | RGB vertical stripe                                                            | -      |            |
| Display Mode            | AHVA / Normal Black                                                            | -      |            |
| Color Gamut             | 72                                                                             | %      |            |
| Touch Technology        | Projected Capacitive Multi-Touch Panel                                         | -      |            |
| Touch Method            | Finger or exclusive pen                                                        | -      |            |
| Numbers of Touch        | 10                                                                             | Points |            |
| Touch Driver            | ETP-MB-EXC84H5680STAG : USB                                                    | -      |            |
| Touch Sensor Glass Type | Strengthening Glass                                                            | -      |            |
| Touch Controller IC     | EETI, EXC80H84                                                                 | -      |            |
| Touch Driver Interface  | USB 2.0                                                                        | -      |            |
| Support OS              | Windows<br>(Embedded/CE/XP/2000/Vista/7/8/10) /<br>Linux / Android / MAC / QNX | -      |            |



### 3. ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit.

| Parameter               | Symbol   | Min. | Max.  | Unit |
|-------------------------|----------|------|-------|------|
| Logic/LCD Drive Voltage | $V_{DD}$ | -0.3 | +5.5  | V    |
| LED Supply Voltage      | $V_F$    | -0.3 | +51.2 | V    |
| Operating Temperature   | $T_{op}$ | -10  | +60   | °C   |
| Operating Humidity      | $H_{op}$ | 5    | 90    | %RH  |
| Storage Temperature     | $T_{st}$ | -20  | +60   | °C   |
| Storage Humidity        | $H_{st}$ | 5    | 90    | %RH  |
| Touch DC Supply Voltage | USB      | -0.3 | 6.0   | V    |

Note:

1. Permanent damage to the device may occur if maximum values are exceeded. Function operation should be restricted to the conditions described under Normal Operating Conditions.
2. Maximum Wet-Bulb temperature should be 39°C and no condensation.

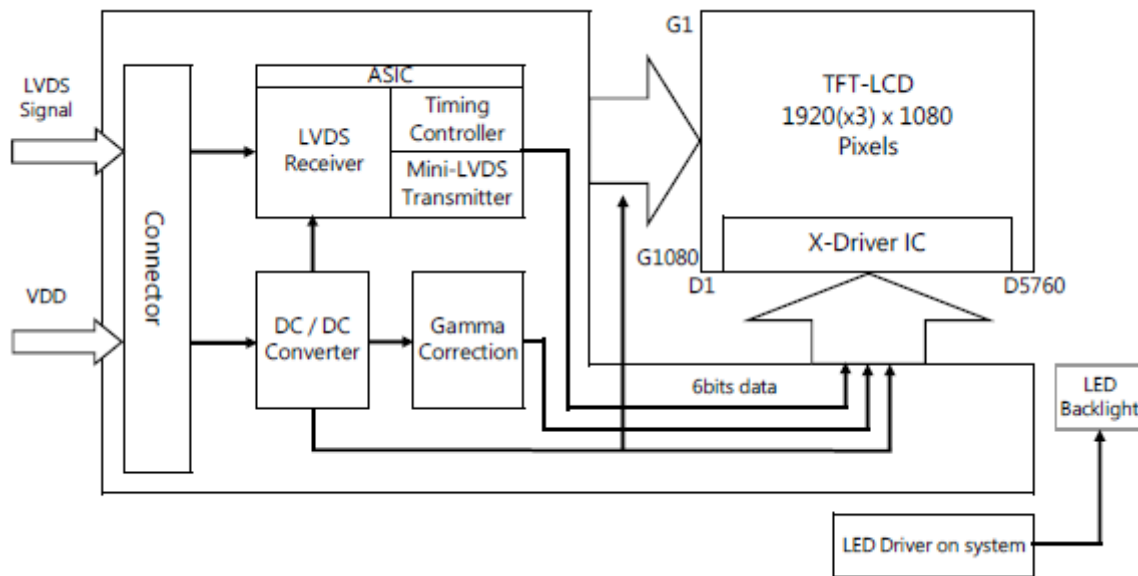
The relative humidity must not exceed 90% non-condensing at temperatures of 40°C or less. At temperatures greater than 40°C, the wet bulb temperature must not exceed 39°C.

### 4. ELECTRICAL CHARACTERISTICS

#### 4.1.LCD MODULE

##### 4.1.1. LCD BLOCK DIAGRAM

The following diagram shows the function block of the 21.5 inches wide Color TFT/LCD module.



#### I/F PCB Interface:

Connector: MSBKT2407P30HB

#### Mating Type:

FI-X30H or FI-X30C2-NPB (Unlocked Type)

#### 4.1.2. POWER SPECIFICATION

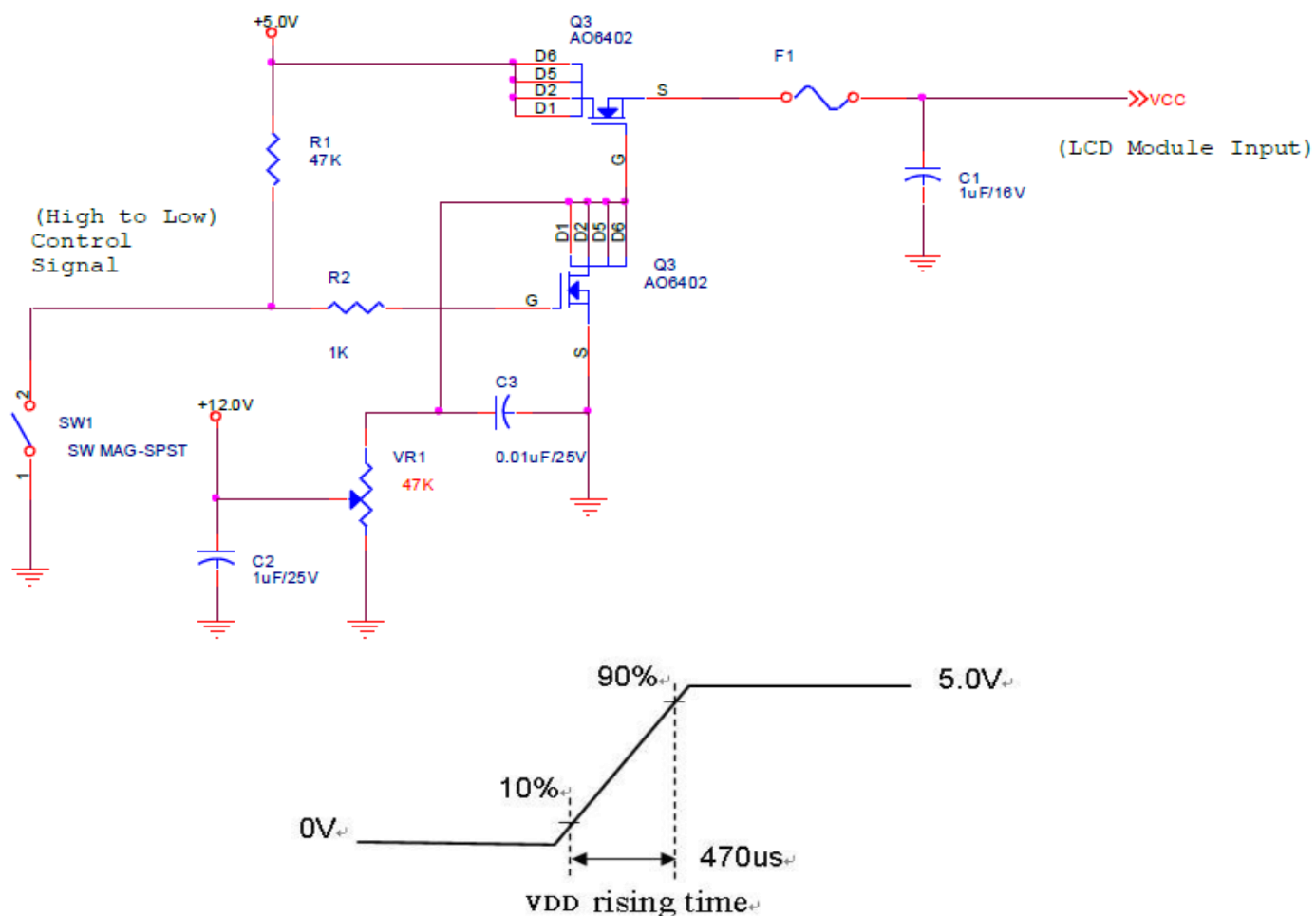
LCD Input power specifications are as below;

The power specifications are measured under 25°C and frame frequency under 60Hz.

| Symbol | Parameter                                      | Min. | Typ. | Max. | Units     | Remark                                   |
|--------|------------------------------------------------|------|------|------|-----------|------------------------------------------|
| VDD    | Logic/LCD Drive Voltage                        | 4.5  | 5.0  | 5.5  | V         |                                          |
| IDD    | IDD Current                                    | -    | 0.46 | 0.55 | A         | All White pattern<br>(VDD=5.0V, at 60Hz) |
| PDD    | VDD Power                                      | -    | 2.3  | 2.75 | W         | All White pattern<br>(VDD=5.0V, at 60Hz) |
| IRush  | Inrush Current                                 | -    | -    | 3.0  | A         | Note 1                                   |
| VDDrp  | Allowable<br>Logic/LCD Drive<br>Ripple Voltage | -    | -    | 500  | mV<br>p-p | All White pattern<br>(VDD=5.0V, at 60Hz) |

Note 1: Measure Condition

The duration of rising time of power input is 470us.



### 4.1.3. LVDS DC ELECTRICAL CHARACTERISTICS

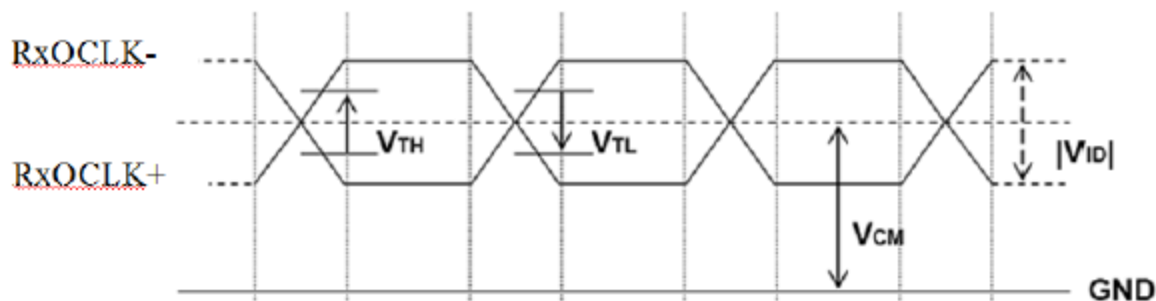
Input signals shall be low or High-Z state when VDD is off. Please refer to the specification of SN75LVDS82DGG (Texas Instruments) in detail.

| Symbol | Item                                   | Min. | Typ. | Max. | Unit | Remark                       |
|--------|----------------------------------------|------|------|------|------|------------------------------|
| VTH    | Differential Input High Threshold      |      |      | +100 | mV   | VCM=1.2V<br>Note 1           |
| VTL    | Differential Input Low Threshold       | -100 |      |      | mV   | VCM=1.2V<br>Note 1           |
| VID    | Input Differential Voltage             | 100  | 400  | 600  | mV   | Note 1                       |
| VICM   | Differential Input Common Mode Voltage | 1.0  | 1.2  | 1.5  | V    | VTH-VTL=200mV(max)<br>Note 1 |

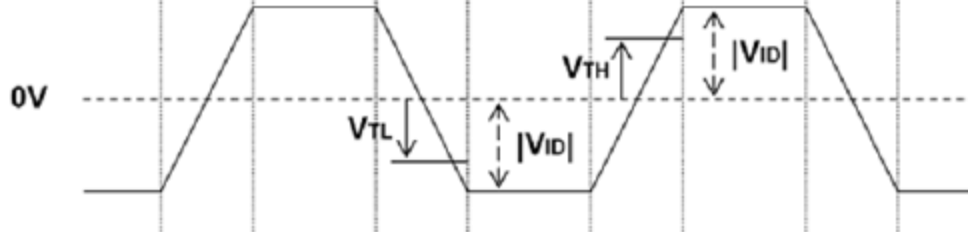
Note 1: LVDS Signal Waveform

Use RxOCLK- & RxOCLK+ as example.

#### Single-End



#### Differential Signal



### 4.1.4. LCD BACKLIGHT UNIT

| Parameter             | Symbol           | Min.   | Typ.  | Max. | Units | Remark                          |
|-----------------------|------------------|--------|-------|------|-------|---------------------------------|
| LED supply Current    | I <sub>F</sub>   |        | 90    |      | mA    | Ta=25°C                         |
| LED Supply Voltage    | V <sub>F</sub>   |        | 3.07  | 3.20 | V     | I <sub>F</sub> =(90)mA, Ta=25°C |
| LED Power Consumption | P <sub>LED</sub> | -      | 0.277 |      | W     | I <sub>F</sub> =(90)mA, Ta=25°C |
| LED Life-Time         | LL               | 50,000 | -     | -    | Hour  | I <sub>F</sub> =(90)mA, Ta=25°C |

Note 1: Ta means ambient temperature of TFT-LCD module.

Note 2: I<sub>F</sub>, V<sub>F</sub>, P<sub>LED</sub> are defined for single LED.

Note 3: If G215HAN01.5 01 module is driven by high current or at high ambient temperature & humidity condition. The operation life will be reduced.

Note 4: Operating life means brightness goes down to 50% initial brightness. Minimum operating life time is estimated data.

Note 5: Each LED light bar consists of 64 pcs LED package (4 strings x 16 pcs / string)

### 4.1.5. LCD INPUT TERMINAL PIN ASSIGNMENT

The module using a pair of LVDS receiver is SN75LVDS82 / SN75LVDS83 (Texas Instruments) or compatible. LVDS is a different signal technology for LCD interface and high speed data transfer device. Transmitter shall be SN75LVDS83 (negative edge sampling) or compatible. The first LVDS port (RxOxxx) transmits odd pixels while the second LVDS port (RxExxx) transmits even pixels.

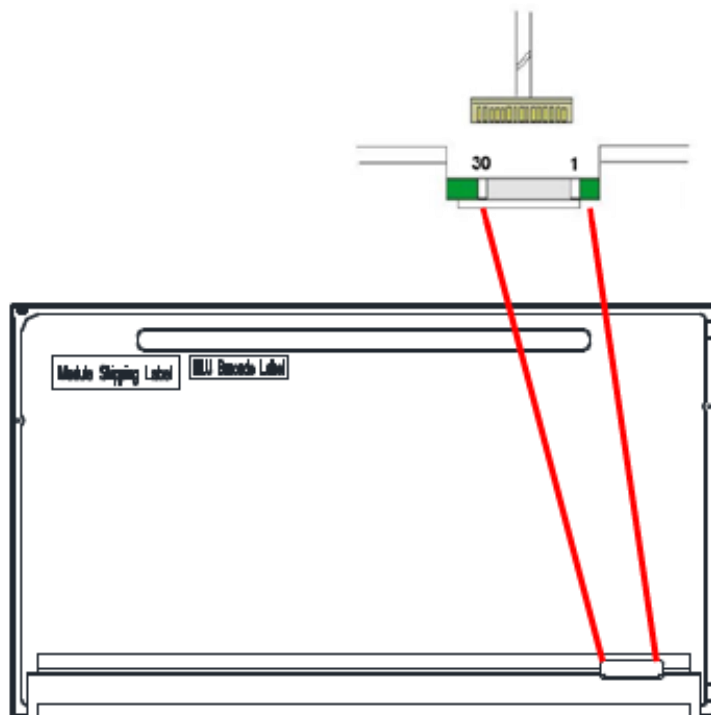
#### LVDS Connector

|                   |              |                                         |
|-------------------|--------------|-----------------------------------------|
| TFT-LCD Connector | Manufacturer | STM                                     |
|                   | Part Number  | MSBKT2407P30HB                          |
| Mating Connector  | Manufacturer | STM                                     |
|                   | Part Number  | FI-X30H or FI-X30C2-NPB (Unlocked Type) |

Note 1: Start from right side

| Pin | Symbol  | Description                                        | Note |
|-----|---------|----------------------------------------------------|------|
| 1   | RXO0-   | Negative LVDS differential data input (Odd data)   |      |
| 2   | RXO0+   | Positive LVDS differential data input (Odd data)   |      |
| 3   | RXO1-   | Negative LVDS differential data input (Odd data)   |      |
| 4   | RXO1+   | Positive LVDS differential data input (Odd data)   |      |
| 5   | RXO2-   | Negative LVDS differential data input (Odd data)   |      |
| 6   | RXO2+   | Positive LVDS differential data input (Odd data)   |      |
| 7   | GND     | Ground                                             |      |
| 8   | RXOCLK- | Negative LVDS differential clock input (Odd data)  |      |
| 9   | RXOCLK+ | Positive LVDS differential clock input (Odd data)  |      |
| 10  | RXO3-   | Negative LVDS differential data input (Odd data)   |      |
| 11  | RXO3+   | Positive LVDS differential data input (Odd data)   |      |
| 12  | RXE0-   | Negative LVDS differential data input (Even data)  |      |
| 13  | RXE0+   | Positive LVDS differential data input (Even data)  |      |
| 14  | GND     | Ground                                             |      |
| 15  | RXE1-   | Negative LVDS differential data input (Even data)  |      |
| 16  | RXE1+   | Positive LVDS differential data input (Even data)  |      |
| 17  | GND     | Ground                                             |      |
| 18  | RXE2-   | Negative LVDS differential data input (Even data)  |      |
| 19  | RXE2+   | Positive LVDS differential data input (Even data)  |      |
| 20  | RXECLK- | Negative LVDS differential clock input (Even data) |      |
| 21  | RXECLK+ | Positive LVDS differential clock input (Even data) |      |
| 22  | RXE3-   | Negative LVDS differential data input (Even data)  |      |
| 23  | RXE3+   | Positive LVDS differential data input (Even data)  |      |
| 24  | GND     | Must connect to ground                             |      |
| 25  | NC      | No connection (for AUO test only, Do not connect)  |      |
| 26  | NC      | No connection (for AUO test only, Do not connect)  |      |
| 27  | NC      | No connection (for AUO test only, Do not connect)  |      |
| 28  | VDD     | Power Supply Input Voltage                         |      |
| 29  | VDD     | Power Supply Input Voltage                         |      |
| 30  | VDD     | Power Supply Input Voltage                         |      |

Note 1: Input signals shall be low or High-impedance state when VDD is off.



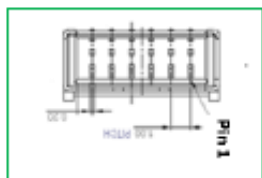
Note 2: Input signals of clock shall be the same timing.

Note 3: Please follow TV VESA Pin Assignment.

### 4.1.6. LED BACKLIGHT UNIT

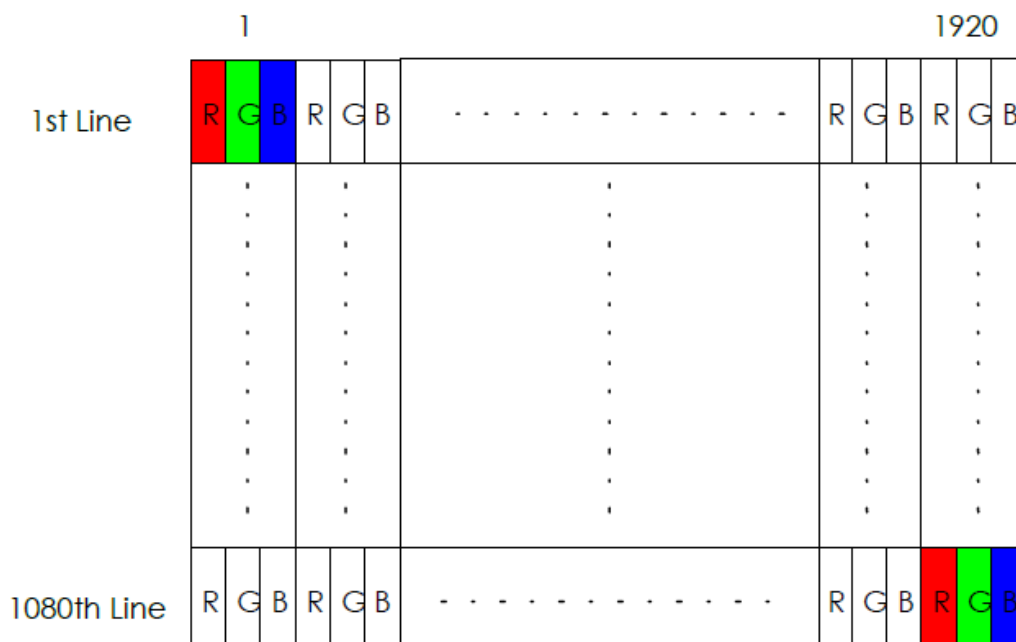
|                              |                                                                                                |
|------------------------------|------------------------------------------------------------------------------------------------|
| Connector Name / Description | Lamp Connector                                                                                 |
| Manufacturer                 | CviLux or Compatible                                                                           |
| Connector Model Number       | CI1406M1HRN-NH1 or compatible                                                                  |
| Mating Model Number          | H112K-P06N-00B (Non-Locking type) or Compatible<br>H112K-P06N-13B (Locking type) or Compatible |

| Pin No. | Symbol            | Description                               |
|---------|-------------------|-------------------------------------------|
| Pin 1   | Ch1               | LED Current Feedback Terminal (Channel 1) |
| Pin 2   | Ch2               | LED Current Feedback Terminal (Channel 2) |
| Pin 3   | V <sub>SLED</sub> | LED Power Supply Voltage Input Terminal   |
| Pin 4   | V <sub>SLED</sub> | LED Power Supply Voltage Input Terminal   |
| Pin 5   | Ch3               | LED Current Feedback Terminal (Channel 3) |
| Pin 6   | Ch4               | LED Current Feedback Terminal (Channel 4) |

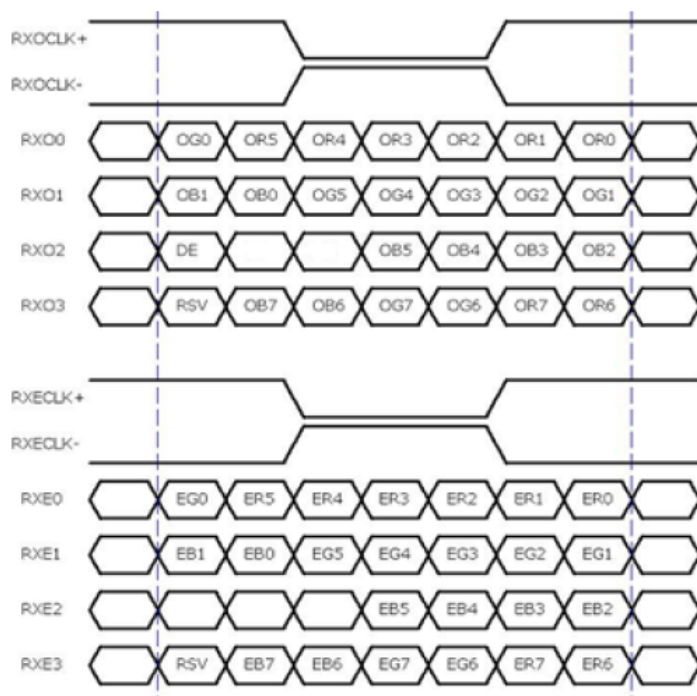


### 4.1.7. PIXEL FORMAT IMAGE

Following figure shows the relationship of the input signals and LCD pixel format.



### 4.1.8. THE LCD INPUT DATA FORMAT



| 8 Bit Color Bit Order |    |    |    |
|-----------------------|----|----|----|
| MSB                   | R7 | G7 | B7 |
|                       | R6 | G6 | B6 |
|                       | R5 | G5 | B5 |
|                       | R4 | G4 | B4 |
|                       | R3 | G3 | B3 |
|                       | R2 | G2 | B2 |
|                       | R1 | G1 | B1 |
| LSB                   | R0 | G0 | B0 |

Note1: Normally DE mode only. VS and HS on EVEN channel are not used.

Note2: Please follow VESA.

Note3: 8-bits signal input.

### 4.1.9. LCD TIMING CHARACTERISTICS

| Parameter  |           | Symbol                                                   | Min. | Typ. | Max. | Unit              |
|------------|-----------|----------------------------------------------------------|------|------|------|-------------------|
| V-section  | Period    | T <sub>V</sub>                                           | 1094 | 1130 | 1836 | T <sub>LINE</sub> |
|            | Active    | T <sub>disp(v)</sub>                                     | 1080 |      |      |                   |
|            | Blanking  | T <sub>bp(v)</sub> +T <sub>fp(v)</sub> +PW <sub>vs</sub> | 14   | 50   | 756  |                   |
| H-section  | Period    | T <sub>h</sub>                                           | 1000 | 1050 | 1678 | T <sub>CLK</sub>  |
|            | Active    | T <sub>disp(h)</sub>                                     | 960  |      |      |                   |
|            | Blanking  | T <sub>bp(h)</sub> +T <sub>fp(h)</sub> +PW <sub>hs</sub> | 40   | 90   | 718  |                   |
| Clock      | Period    | T <sub>CLK</sub>                                         | 11.2 | 14   | 18.6 | ns                |
|            | Frequency | Freq.                                                    | 53.7 | 71.2 | 90   | MHz               |
| Frame Rate | Frequency | 1/T <sub>V</sub>                                         | 49   | 60   | 76   | Hz                |

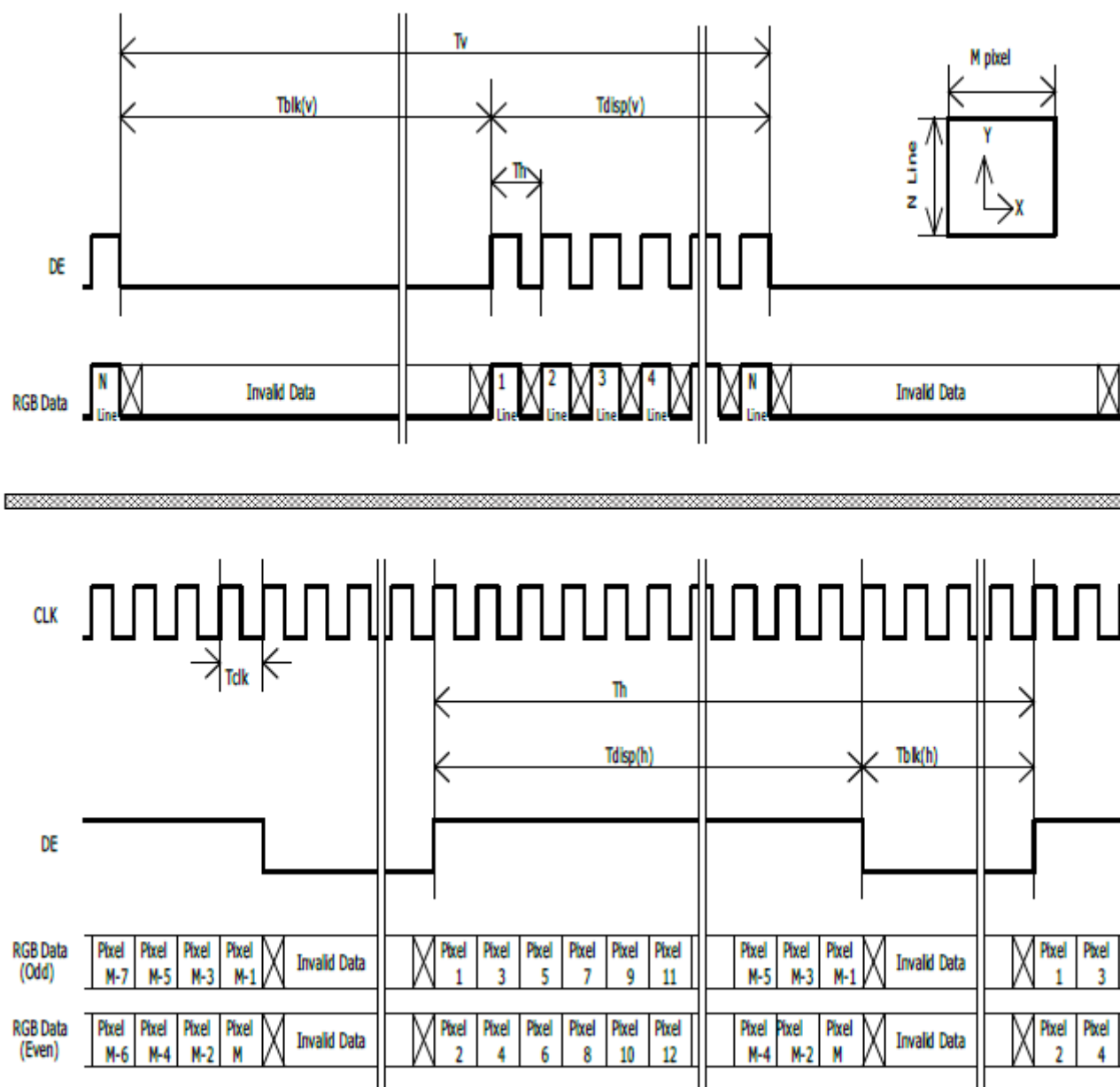
Note 1: Only DE mode operation

The input of Hsync & Vsync signal does not have an effect upon the LCD normal operation.

Note 2: The performance of the electro-optical characteristics may be influenced by variance of the vertical refresh rates.

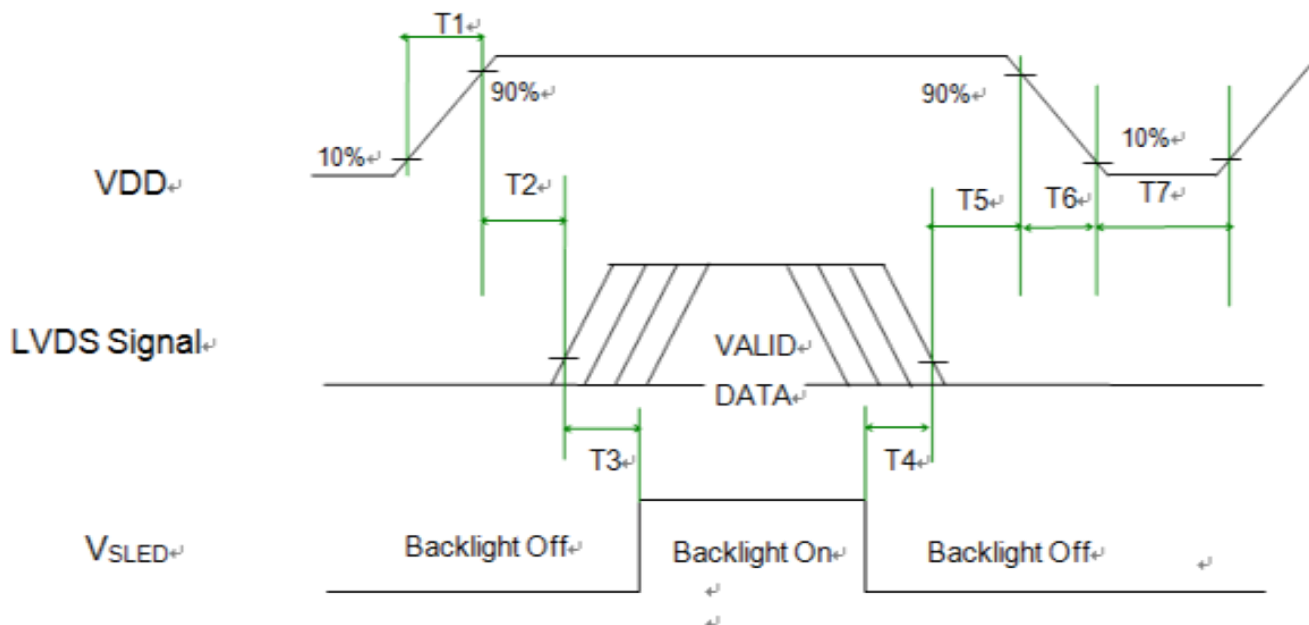
Note 3: Horizontal period should be even.

### 4.1.10. LCD INPUT TIMING DIAGRAM



### 4.1.11. POWER SEQUENCE FOR LCD

VDD power and lamp on/off sequence is as below. Interface signals are also shown in the chart. Signals from any system shall be High-impedance state or low level when VDD is off.



Power ON/OFF sequence timing

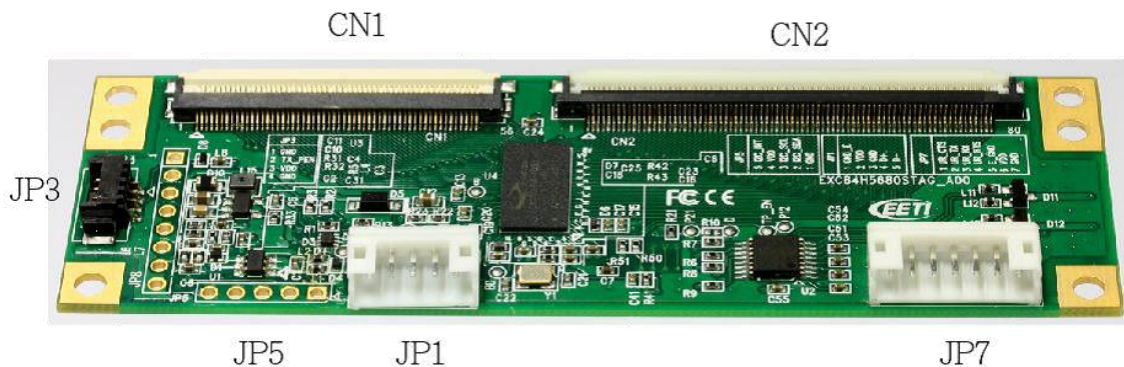
| Parameter | Value |      |      | Unit |
|-----------|-------|------|------|------|
|           | Min.  | Typ. | Max. |      |
| T1        | 0.5   | -    | 10   | ms   |
| T2        | 0     | -    | 50   | ms   |
| T3        | 500   | -    | -    | ms   |
| T4        | 100   | -    | -    | ms   |
| T5        | 0     | -    | 50   | ms   |
| T6        | 0     | -    | 200  | ms   |
| T7        | 1000  | -    | -    | ms   |

### 4.2.TOUCH CONTROL BOARD

ETP-MB-EXC84H5680STAG

| Parameter                | Values                                                                                      |      |      | Unit | Notes                   |
|--------------------------|---------------------------------------------------------------------------------------------|------|------|------|-------------------------|
|                          | Min.                                                                                        | Typ. | Max. |      |                         |
| Input Voltage            | 3.5                                                                                         | 5    | 5.5  | V    |                         |
| Interface                | USB:2.0                                                                                     |      |      | -    |                         |
| Max Resolution           | 16384 x 16384 resolution                                                                    |      |      | -    |                         |
| Channels of panel        | Max. TX: 48 Rx:80 channels                                                                  |      |      | mm   | Including shielding pin |
| Linearity                | Line drawing accuracy:<br>1pt +/- 1 mm offset /10 mm<br>Touch (point) accuracy: 1pt +/- 1mm |      |      | mm   |                         |
| Power consumption (mA)   | Active Mode: <90 mA<br>Idle Mode: depends on firmware                                       |      |      | mA   |                         |
| Report rate (points/sec) | ≥100                                                                                        |      |      | Hz   |                         |
| Response time            | Average <25                                                                                 |      |      | ms   |                         |

#### 4.2.1.TOUCH CONTROL BOARD PIN ASSIGNMENT



### FPC Pin Description

| CN1 |       |    |      |    |       |
|-----|-------|----|------|----|-------|
| PN  |       | PN |      | PN |       |
| 1   | NC    | 21 | TX34 | 41 | TX14  |
| 2   | NC    | 22 | TX33 | 42 | TX13  |
| 3   | NC    | 23 | TX32 | 43 | TX12  |
| 4   | NC    | 24 | TX31 | 44 | TX11  |
| 5   | NC    | 25 | TX30 | 45 | TX10  |
| 6   | NC    | 26 | TX29 | 46 | TX9   |
| 7   | NC    | 27 | TX28 | 47 | TX8   |
| 8   | NC    | 28 | TX27 | 48 | TX7   |
| 9   | TX_S1 | 29 | TX26 | 49 | TX6   |
| 10  | TX45  | 30 | TX25 | 50 | TX5   |
| 11  | TX44  | 31 | TX24 | 51 | TX4   |
| 12  | TX43  | 32 | TX23 | 52 | TX3   |
| 13  | TX42  | 33 | TX22 | 53 | TX2   |
| 14  | TX41  | 34 | TX21 | 54 | TX1   |
| 15  | TX40  | 35 | TX20 | 55 | TX0   |
| 16  | TX39  | 36 | TX19 | 56 | TX_S0 |
| 17  | TX38  | 37 | TX18 |    |       |
| 18  | TX37  | 38 | TX17 |    |       |
| 19  | TX36  | 39 | TX16 |    |       |
| 20  | TX35  | 40 | TX15 |    |       |

| CN2 |       |    |      |    |       |
|-----|-------|----|------|----|-------|
| PN  |       | PN |      | PN |       |
| 1   | RX_S1 | 21 | RX58 | 41 | RX38  |
| 2   | RX77  | 22 | RX57 | 42 | RX37  |
| 3   | RX76  | 23 | RX56 | 43 | RX36  |
| 4   | RX75  | 24 | RX55 | 44 | RX35  |
| 5   | RX74  | 25 | RX54 | 45 | RX34  |
| 6   | RX73  | 26 | RX53 | 46 | RX33  |
| 7   | RX72  | 27 | RX52 | 47 | RX32  |
| 8   | RX71  | 28 | RX51 | 48 | RX31  |
| 9   | RX70  | 29 | RX50 | 49 | RX30  |
| 10  | RX69  | 30 | RX49 | 50 | RX29  |
| 11  | RX68  | 31 | RX48 | 51 | RX28  |
| 12  | RX67  | 32 | RX47 | 52 | RX27  |
| 13  | RX66  | 33 | RX46 | 53 | RX26  |
| 14  | RX65  | 34 | RX45 | 54 | RX25  |
| 15  | RX64  | 35 | RX44 | 55 | RX24  |
| 16  | RX63  | 36 | RX43 | 56 | RX23  |
| 17  | RX62  | 37 | RX42 | 57 | RX22  |
| 18  | RX61  | 38 | RX41 | 58 | RX21  |
| 19  | RX60  | 39 | RX40 | 59 | RX20  |
| 20  | RX59  | 40 | RX39 | 60 | RX19  |
|     |       |    |      | 80 | RX_S0 |

### Connector Pin Configuration

#### JP1 USB connector

| JP1 |       |
|-----|-------|
| 1   | GND_E |
| 2   | VDD   |
| 3   | GND   |
| 4   | D+    |
| 5   | D-    |

#### JP5 I2C connector

| JP5 |         |
|-----|---------|
| 1   | GND     |
| 2   | I2C_SDA |
| 3   | I2C_SCL |
| 4   | VDD     |
| 5   | I2C_INT |

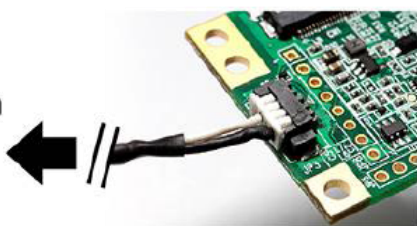
#### JP7 RS232 connector

| JP7 |        |
|-----|--------|
| 1   | UR_CTS |
| 2   | UR_TX  |
| 3   | UR_RX  |
| 4   | UR_RTS |
| 5   | GND_E  |
| 6   | VDD    |
| 7   | GND    |

#### JP3 Tethered active stylus connector

| JP3 |        |
|-----|--------|
| 1   | GND_D  |
| 2   | TX_PEN |
| 3   | VDD    |
| 4   | GND_D  |

eGalaxPen  
Type E  
Type T



\*JP3 connector is reserved for EETI tethered active stylus :

Type E : Entry-type active stylus

Type T : Tethered USB active stylus

JP1 : USB

Brand: JST

Part number: SM05B-SRSS-TB or equivalence

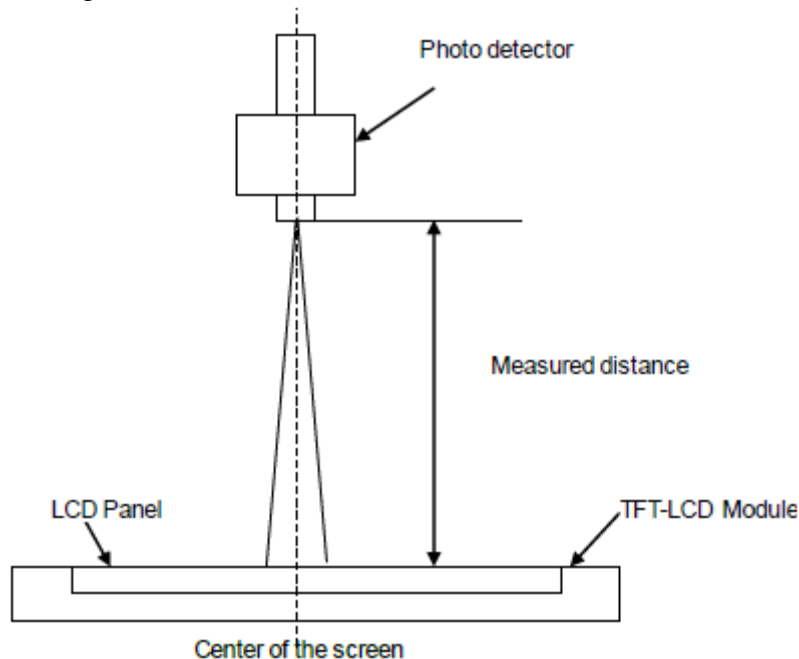
### 5. OPTICAL CHARACTERISTICS

The optical characteristics are measured under stable conditions of 25°C (Room Temperature)

| Item                                         | Unit              | Conditions                      |       | Min.    | Typ.    | Max.    | Note |
|----------------------------------------------|-------------------|---------------------------------|-------|---------|---------|---------|------|
| View Angle                                   | degree            | Horizontal<br>CR>10             | Right |         | 89      | -       | 2    |
|                                              |                   |                                 | Left  |         | 89      | -       |      |
|                                              |                   | Vertical<br>CR>10               | Upper |         | 89      | -       |      |
|                                              |                   |                                 | Lower |         | 89      | -       |      |
| Contrast Ratio                               | -                 | Normal Direction                |       | 800     | 1000    | -       | 3    |
| Response Time                                | ms                | Rising Time (T <sub>IR</sub> )  |       |         | 12      | 22      | 4    |
|                                              |                   | Falling Time (T <sub>IF</sub> ) |       |         | 10      | 20      |      |
|                                              |                   | Rising + Falling                |       | -       | 22      | 42      |      |
| Color /<br>Chromaticity<br>Coordinates (CIE) |                   | Red                             | Rx    | (0.596) | (0.646) | (0.666) | 5    |
|                                              |                   |                                 | Ry    | (0.254) | (0.334) | (0.384) |      |
|                                              |                   | Green                           | Gx    | (0.263) | (0.313) | (0.363) |      |
|                                              |                   |                                 | Gy    | (0.572) | (0.622) | (0.672) |      |
|                                              |                   | Blue                            | Bx    | (0.104) | (0.154) | (0.204) |      |
|                                              |                   |                                 | By    | (0.001) | (0.051) | (0.101) |      |
|                                              |                   | White                           | Wx    | 0.263   | 0.313   | 0.363   |      |
|                                              |                   |                                 | Wy    | 0.279   | 0.329   | 0.379   |      |
| White Luminance                              | cd/m <sup>2</sup> |                                 |       | 400     | 500     | -       | 6    |
| Luminance Uniformity                         | %                 |                                 |       | (75)    | (80)    | -       | 7    |
| Color Gamut                                  | %                 |                                 |       | -       | 72      | -       |      |

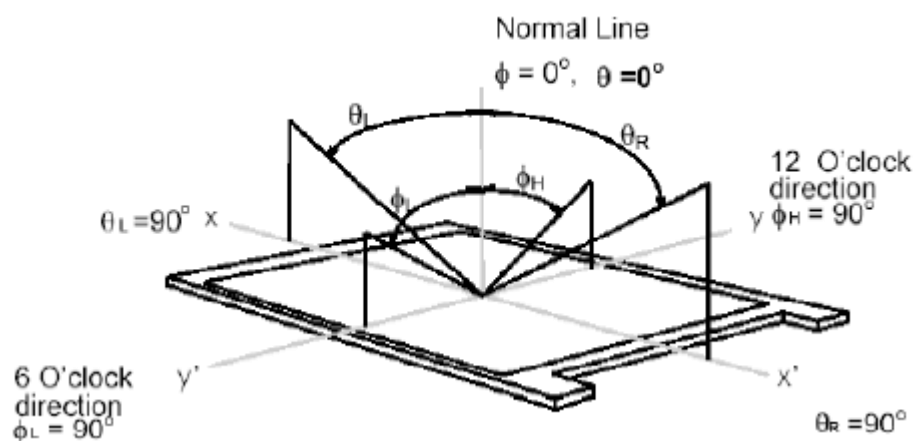
### Note 1: Measurement method

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring (at surface 35°C). In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a stable, windless and dark room.



### Note 2: Definition of viewing angle measured by ELDIM (EZContrast 88)

Viewing angle is the measurement of contrast ratio  $\geq 10$ , at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° ( $\theta$ ) horizontal left and right and 90° ( $\phi$ ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotate about its center to develop the desired measurement viewing angle.

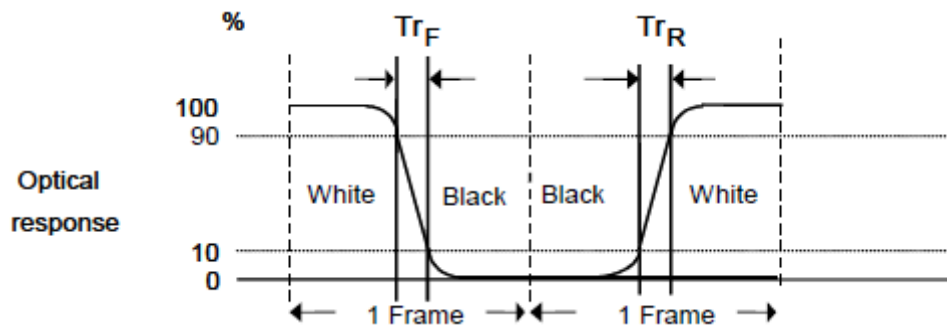


### Note 3: Contrast ratio is measured by TOPCON SR-3

Note 4: Definition of response time measured by Westar TRD-100A

The output signals of photo detector are measured when the input signals are change from “Full Black” to “Full White” (rising time,  $T_{rR}$ ) and from “Full White” to “Full Black” (falling time,  $T_{rF}$ ), respectively. The response time interval is between 10% and 90% (1 frame at 60Hz) of amplitudes.

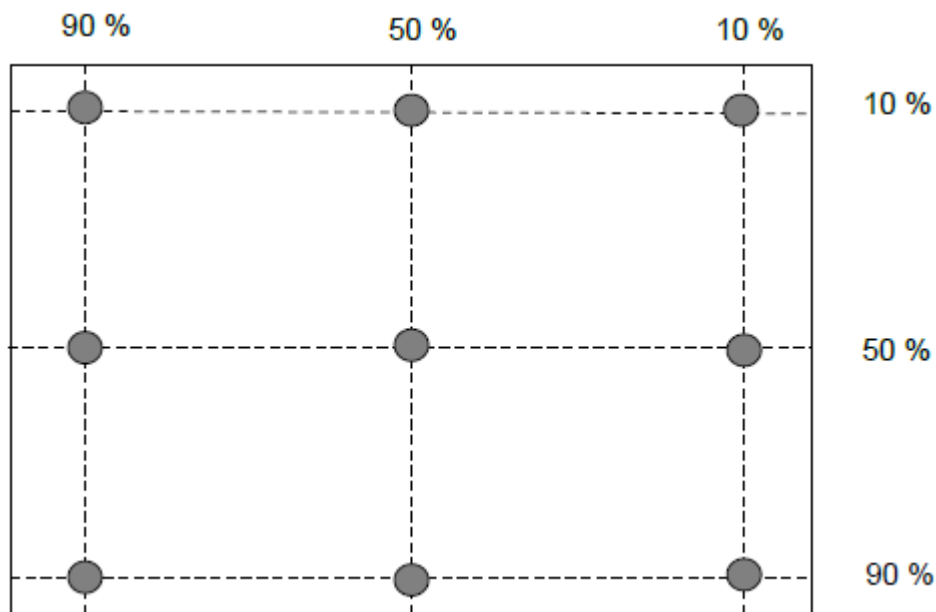
$T_{rR} + T_{rF} = 5 \text{ ms (typ.)}$



Note 5: Color chromaticity and coordinates (CIE) is measured by TOPCON SR-3

Note 6: Central luminance is measured by TOPCON SR-3

Note 7: Luminance uniformity of these 9 points is defined as below and measured by TOPCON SR-3



$$\text{Uniformity} = \frac{\text{Minimum Luminance of 9 points (1~9)}}{\text{Maximum Luminance of 9 points (1~9)}}$$

### 6. RELIABILITY TEST ITEMS

| Test Item |                                 | Condition                          |
|-----------|---------------------------------|------------------------------------|
| 1         | High temperature/Humidity Bias  | 50°C, 80% 240hrs                   |
| 2         | High temperature storage test   | 60°C, 240hrs                       |
| 3         | Low temperature storage test    | -20°C, 240hrs                      |
| 4         | High temperature operation test | 60°C, 240hrs                       |
| 5         | Low temperature operation test  | -10°C, 240hrs                      |
| 6         | Thermal Cycle storage test      | -20°C(30min)~60°C(30min), 10cycles |

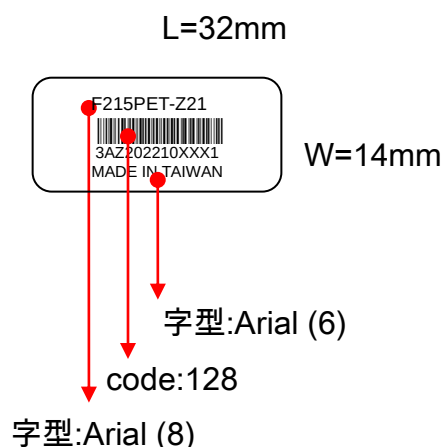
### 7. LABEL

Model NO. **F215PET-Z21**

條碼

SN **3A Z 20 2 21 0 XXX1**

code 1,2 Production location  
 code 3 Production version  
 code 4,5 Production year  
 code 6 Production month  
 code 7,8 Production day  
 code 9 Production code  
 code 10,11,12,13 Serial number



### 8. MECHANICAL CHARACTERISTICS

| Item                     |            | Dimension               | Unit | Note                                    |
|--------------------------|------------|-------------------------|------|-----------------------------------------|
| Outline Dimension        | Horizontal | 494.60                  | mm   | PCAP :<br>B215PBU-E08                   |
|                          | Vertical   | 291.20                  | mm   |                                         |
|                          | Depth      | 2.70                    | mm   |                                         |
|                          | Horizontal | 497.60                  | mm   | LCD :<br>G215HAN01.5 01                 |
|                          | Vertical   | 292.20                  | mm   |                                         |
|                          | Depth      | 10.60                   | mm   |                                         |
|                          | Horizontal | 100.00                  | mm   | Touch Driver :<br>ETP-MB-EXC84H5680STAG |
|                          | Vertical   | 33.00                   | mm   |                                         |
|                          | Depth      | 7.20                    | mm   |                                         |
| Weight                   |            | 2440                    | g    | F215PET-Z21                             |
| Item                     |            | Specification           |      | Remarks                                 |
| PCAP Viewing Area        |            | 476.40 mm x 268.11 mm   |      |                                         |
| PCAP Sensor Area         |            | 481.20 mm x 272.70 mm   |      |                                         |
| PCAP FPC Length          |            | 96.70 mm                |      |                                         |
| PCAP Input method        |            | Finger or exclusive pen |      |                                         |
| PCAP Light Transmission  |            | 90 ± 3 %                |      | BYK Gardner, 550nm<br>ASTM D1003        |
| PCAP Operation force     |            | ≤10g                    |      | Finger Input                            |
| PCAP Hardness of surface |            | ≥7H                     |      | ASTM D3363,<br>Pressure 750g / 45°      |
| PCAP Surface Treatment   |            | Haze < 4 %              |      | BYK Gardner,<br>ASTM D1003              |

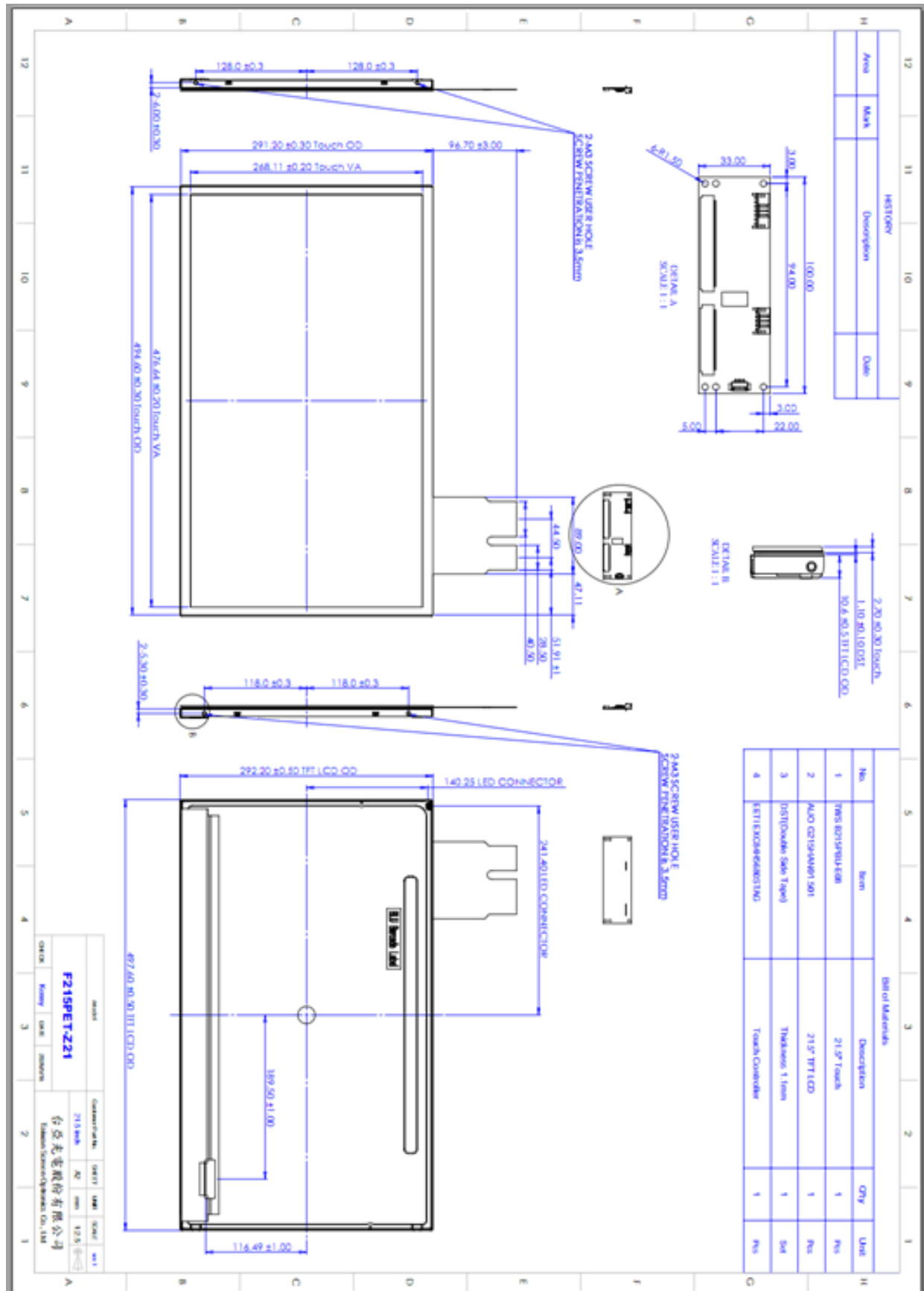
Front View



Back View



### 9. ENGINEERING DRAWING



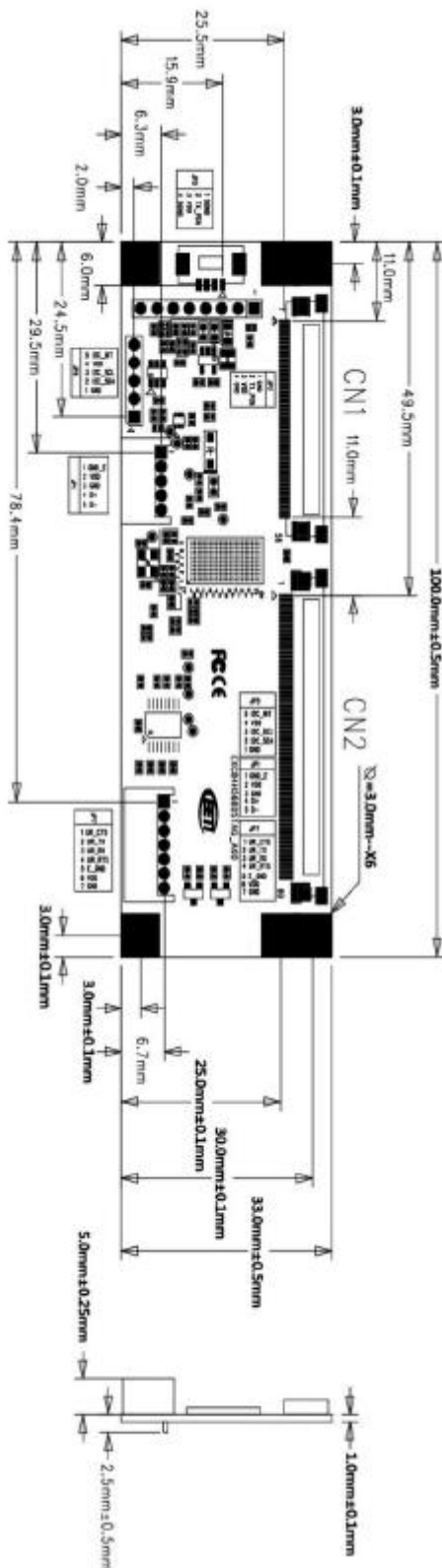


# Product Specification

## F215PET-Z21

Touch Driving Board :

EXC84H5680STAG



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V0

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