晶采光電科技股份有限公司
AMPIRE CO., LTD.

SPECIFICATIONS FOR LCD MODULE

CUSTOMER	
CUSTOMER PART NO.	
AMPIRE PART NO.	AM-800480AQTZQW-T51H
APPROVED BY	
DATE	

☐**Approved For Specifications**
☐Approved For Specifications & Sample

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RECORD OF REVISION

Revision Date	Page	Contents	Editor
2015/9/3	--	New Release	Patrick

1. INTRODUCTION

The LCD module is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. It is composed of a TFT LCD panel, a backlight system, column driver and row driver circuit. This TFT LCD has a 7-inch diagonally measured active display area with WVGA resolution (800 horizontal by 480 vertical pixels array).

- Capacitive Touch Panel with I^2C Interface, EETI touch controller

2. PHYSICAL SPECIFICATIONS

Item	Specifications	Remark
LCD size	7 inch(Diagonal)	
Active area	152.4(W) x 91.44 (H) mm	
Number of Pixels	800(H) × 3 (RGB) × 480(V)	
Color arrangement	R.G.B-stripe	
Display mode	Normally Black	
Number of Colors	16.7M	
Brightness (cd/m^2)	510nit (typ.)	
Contrast Ratio	900:1(Typ.)/ 600:1(min)	
Viewing Angle (CR≧10)	170degree (Horizontal.)	
	170degree (Vertical)	
Interface	TTL RGB	
Module Size (mm)	165.0(H) x 104.0(V) x 8.15 (D)	
Module Weight (g)	T.B.D (typ)	
Backlight Unit	LED	

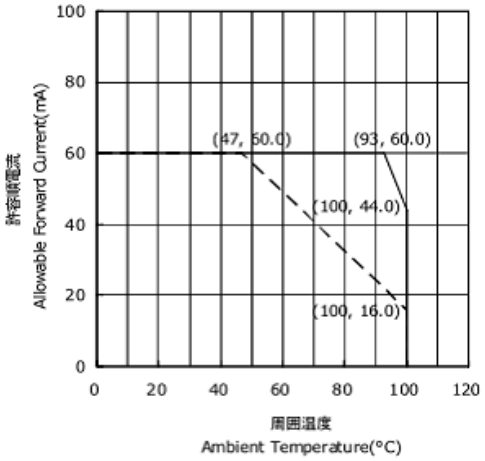
3. ABSOLUTE MAX. RATINGS

Item	Symbol	Min.	Max.	Unit	Note
Supply voltage range	DVDD	-0.3	+5.0	V	Digital power supply voltage
	AVDD	-0.5	+13.5	V	Analog power supply voltage
	VGH	-0.3	+42	V	Gate On voltage
	VGL	-20	+0.3	V	Gate Off voltage
Gate On – Gate Off voltage	VGH-VGL	12	40	V	
Forward Current （per LED）	If	--	30	mA	
Reverse Voltage （per LED）	VR		5	V	
Pulse forward current （per LED）	Ifp		100	mA	(2)
Operating Temperature	Top	-30	+80	℃	(1)
Storage Temperature	Tstg	-30	+80	℃	

(Note 1) If the product were used out of the operation and storage range, it will have quality issue.

(Note 2) Ifp Conditions ： Pulse Width≦10msec，Duty≦1/10。

(Note 3) Each one of LED operation must be follow diagram of Ambient Temperature and Allowable Forward Current.



(Note 4) If users use the product out off the environmental operation range

（temperature and humidity）, it will have visual quality concerns.

4. ELECTRICAL CHARACTERISTICS

4.1. Power Specification

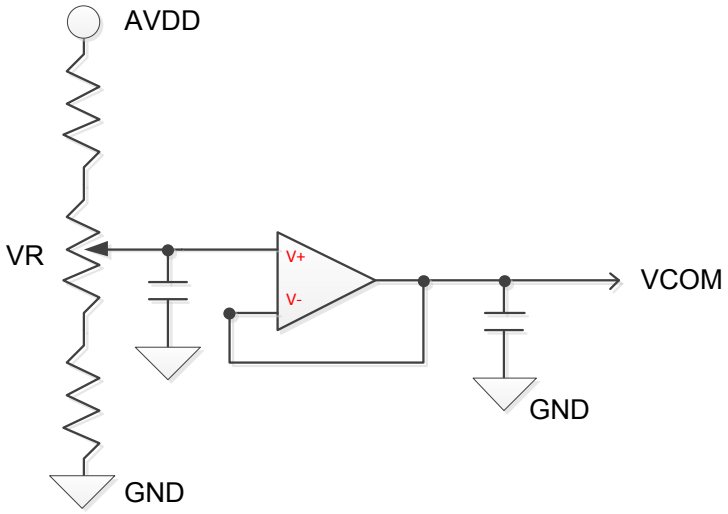
Item	Symbol	Min.	Typ.	Max.	Unit	Note
Digital Supply Voltage	DVDD	3.0	3.3	3.6	V	
Analog Supply Voltage	AVDD	(12.85)	(13)	(13.15)	V	
Gate On Voltage	VGH	19	20	20	V	
Gate Off Voltage	VGL	-6.6	-6	-5.4	V	
Common Voltage	VCOM	--	T.B.D	--	V	Note 2
Logic Input Voltage	VIH	0.7DVDD	--	DVDD	V	
	VIL	GND	--	0.3DVDD	V	
Digital Supply Current	IDVDD	--	T.B.D	--	mA	Note 1
Analog Supply Current	IAVDD	--	T.B.D	--	mA	Note 1
Gate On Current	IVGH	--	T.B.D	--	mA	Note 1
Gate Off Current	IVGL	--	T.B.D	--	mA	Note 1

Note1: Ta=25℃ , Display pattern :

- Typical :256 fray pattern Maximum: Black Pattern

256 gray pattern

Note2: TYP VCOM is only reference value. It must be optimized according to each LCM. Be sure to use VR and OP buffer on VCOM output. Please adjust VCOM to make the flicker level be minimum for getting excellent image.

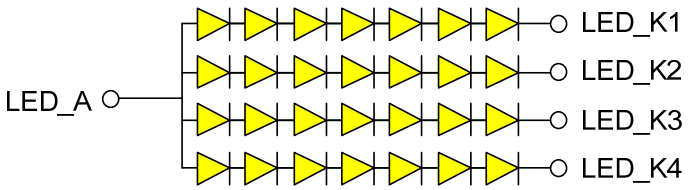


4.2. LED BACKLIGHT DRIVER UNIT

Item	Symbol	Min.	Typ.	Max.	Unit	Note
LED Forward Current	IF	--	160	--	mA	Ta=25℃ (40mA/series)
LED Forward Voltage	VF	15.3	18	20.7	V	IF=40mA/series, Ta=25℃
Power consumption	WL			2.88	W	IF=40mA/series, Ta=25℃
LED Lifetime	--		30000		Hr	IF=40mA/series, Ta=60℃

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

Note 2: the structure of LED B/L shows as below.



Note 3: Using the constant current control to avoid the leakage light and brightness quality issue.

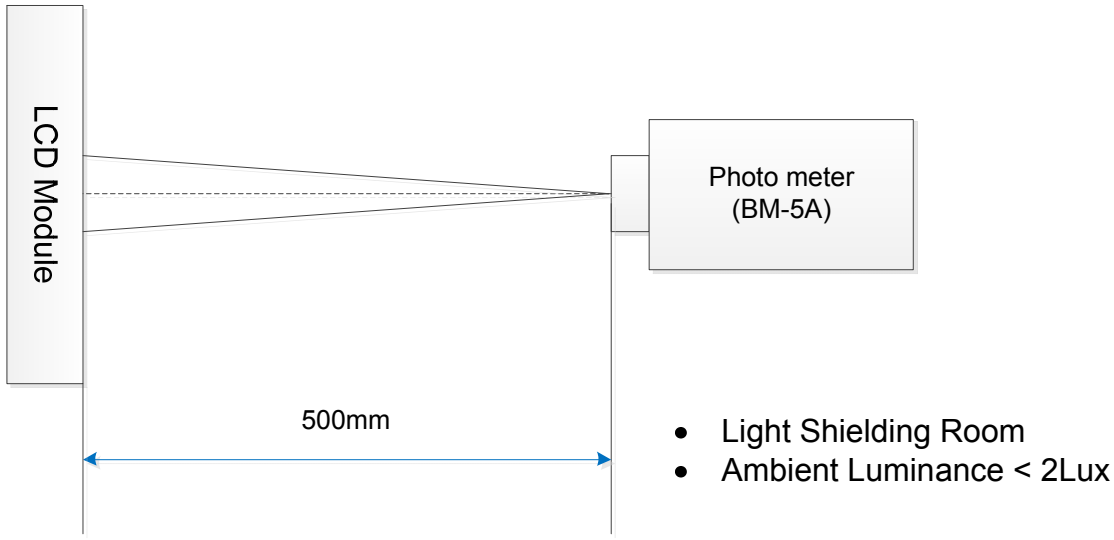
Note 4: Definition of Led lifetime：Luminance < Initial luminance 70%.

5. Optical Specifications

Item	Symbol	Condition	Values			Unit	Remark
			Min	Typ	Max		
Viewing angle (CR≥ 10)	θ_L	θ=180°(9 o'clock)	75	85	-	degree	(1),(2),(3)
	θ_R	θ=0°(3 o'clock)	75	85	-		
	θ_T	θ=90°(12 o'clock)	75	85	-		
	θ_B	θ=270°(6 o'clock)	75	85	-		
Response time	$T_{r+}T_f$	Normal θ=Φ=0° Point-5	-	25	35	Msec	(1),(2),(5)
Contrast ratio	CR		600	900	-	-	(1),(2),(4)
Color chromaticity	W_X		0.263	0.313	0.363	-	(1),(2)
	W_Y		0.279	0.329	0.379	-	
Luminance	L		400	510		cd/m^2	(1),(2)
Luminance uniformity	Y_U		75	80	-	%	(1),(2),(6)
NTSC	-	Point-5	--	72	-	%	(1),(2)

Note (1) Measurement Setup:

The LCD module should be stabilized at given temperature(25℃) for 15 minutes to Avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.



Note (2) The LED input parameter setting IL=160mA (Back-light current)

Note (3) Definition of Viewing Angle

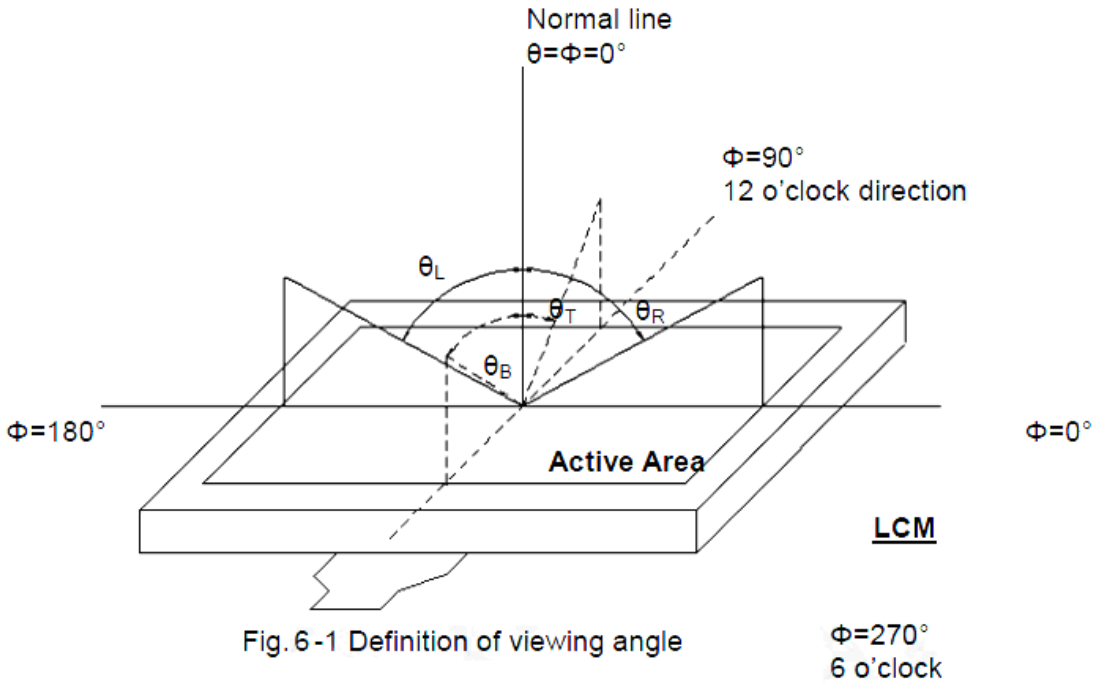


Fig. 6-1 Definition of viewing angle

Note (4) Definition of Contrast Ratio (CR)

The contrast ratio can be calculated by the following expression

Contrast Ratio (CR) = L255 / L0

L255: Luminance of gray level 255, L0: Luminance of gray level 0

Note (5) Definition of Response Time (TR, TF)

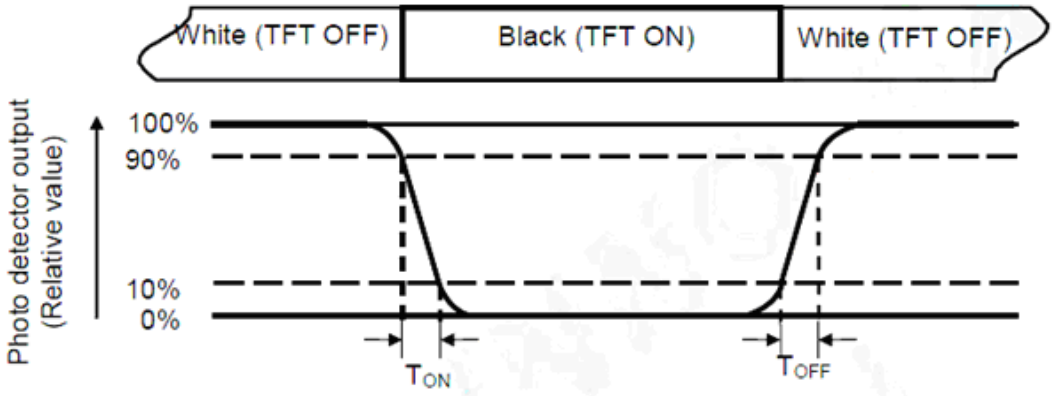
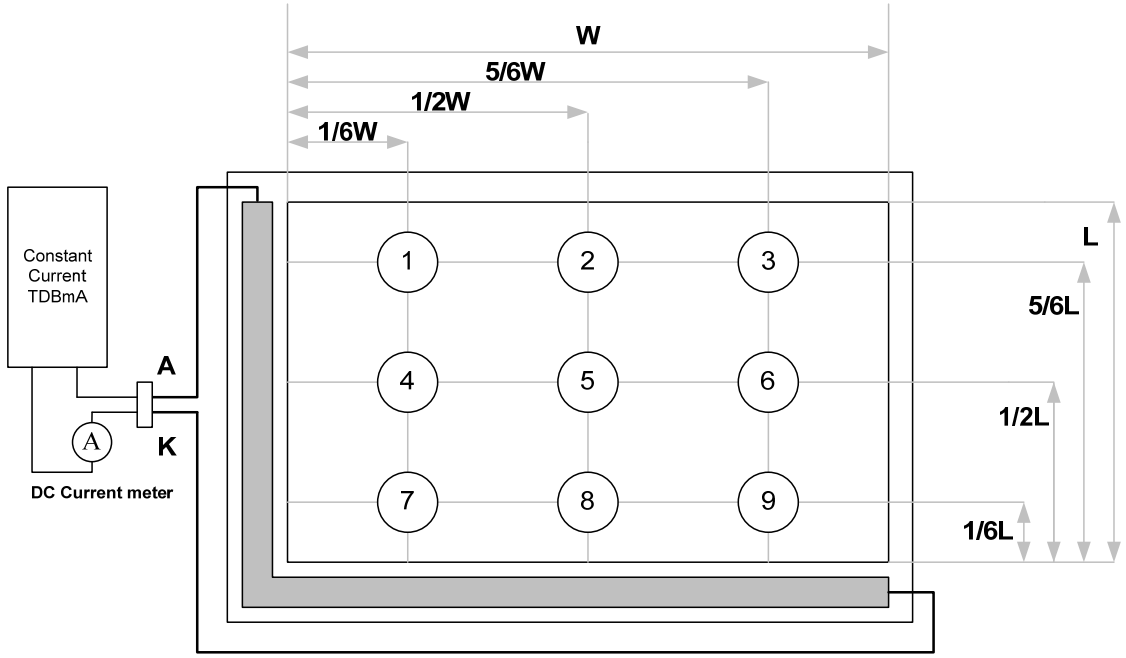


Fig. 6-3 Definition of response time

Note (6) Definition of Brightness Luminance and Luminance Uniformity

Brightness luminance = the luminance of gray level 255 at point 5

$$\text{Luminance Uniformity} = \frac{\text{(Min Luminance of 9 points)}}{\text{(Max Luminance of 9 points)}} \times 100\%$$



6. INTERFACE

6.1. CN1:

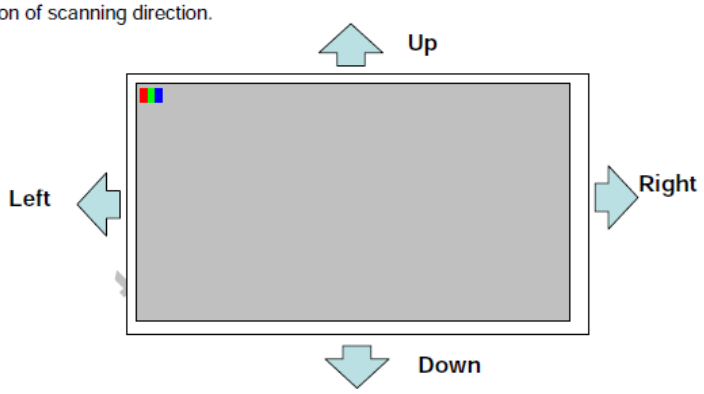
Pin No	Symbol	I/O	Function
1	AGND	P	Analog Ground
2	AVDD	P	Analog Power
3	DVDD	P	Digital Power
4	R0	I	Data Input(LSB)
5	R1	I	Data Input
6	R2	I	Data Input
7	R3	I	Data Input
8	R4	I	Data Input
9	R5	I	Data Input
10	R6	I	Data Input
11	R7	I	Data Input(MSB)
12	G0	I	Data Input(LSB)
13	G1	I	Data Input
14	G2	I	Data Input
15	G3	I	Data Input
16	G4	I	Data Input
17	G5	I	Data Input
18	G6	I	Data Input
19	G7	I	Data Input(MSB)
20	B0	I	Data Input(LSB)
21	B1	I	Data Input
22	B2	I	Data Input
23	B3	I	Data Input
24	B4	I	Data Input
25	B5	I	Data Input
26	B6	I	Data Input
27	B7	I	Data Input(MSB)
28	DCLK	I	Clock Input
29	DE	I	Data Enable signal
30	HSD	I	Horizontal sync input. Negative polarity
31	VSD	I	Vertical sync input. Negative polarity
32	MODE	I	DE/SYNC mode select .normally pull high H:DE mode .L:HSD/VSD mode
33	RSTB	I	Global reset pin. Active low to enter reset state. suggest to connecting with an RC reset circuit for stability . normally pull high. (R=47K ohm , C=1uF)
34	STBYB	I	Standby mode, normally pull high STBYB="1",normal operation STBYB="0",timming control , source driver will turn off, all Input are high-Z
35	SHLR	I	Right or Left sequence control . (Note 1)
36	DVDD	P	Digital Power
37	UPDN	I	Up or down scan control. (Note 1)
38	GND	P	Digital Ground

39	AGND	P	Analog Ground
40	AVDD	P	Analog Power
41	VCOM	P	Common Voltage
42	NC	-	Not connect
43	NC	-	Not connect
44	NC	-	Not connect
45	NC	-	Not connect
46	NC	-	Not connect
47	NC	-	Not connect
48	NC	-	Not connect
49	NC	-	Not connect
50	NC	-	Not connect
51	NC	-	Not connect
52	NC	-	Not connect
53	NC	-	Not connect
54	NC	-	Not connect
55	NC	-	Not connect
56	VGH	P	Positive Power for TFT
57	DVDD	P	Digital Power
58	VGL	P	Negative Power for TFT
59	GND	P	Digital Ground
60	NC	-	Not connect

(Note 1)

SHLR	UPDN	Data shifting
DVDD	GND	Left→Right，Up→Down(default)
GND	GND	Right→Left，Up→Down
DVDD	DVDD	Left→Right，Down→Up
GND	DVDD	Right→Left，Down→Up

Definition of scanning direction.



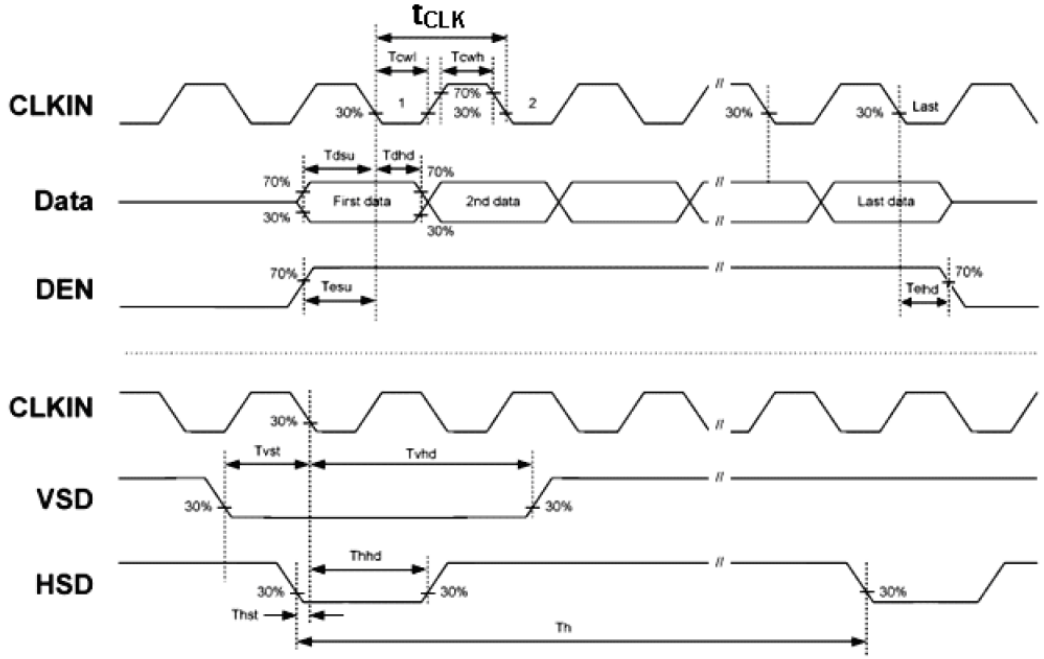
6.2 CN2 LED Back-light

Pin No.	Symbol	I/O	Description	Note
1	A	P	Anode	
2	A	P	Anode	
3	A	P	Anode	
4	NC	--	No Connection	
5	K1	P	Cathode 1	
6	K2	P	Cathode 2	
7	K3	p	Cathode 3	
8	K4	p	Cathode 4	
9	NC	--	No Connection	
10	NC	--	No Connection	

7. AC Timing characteristic

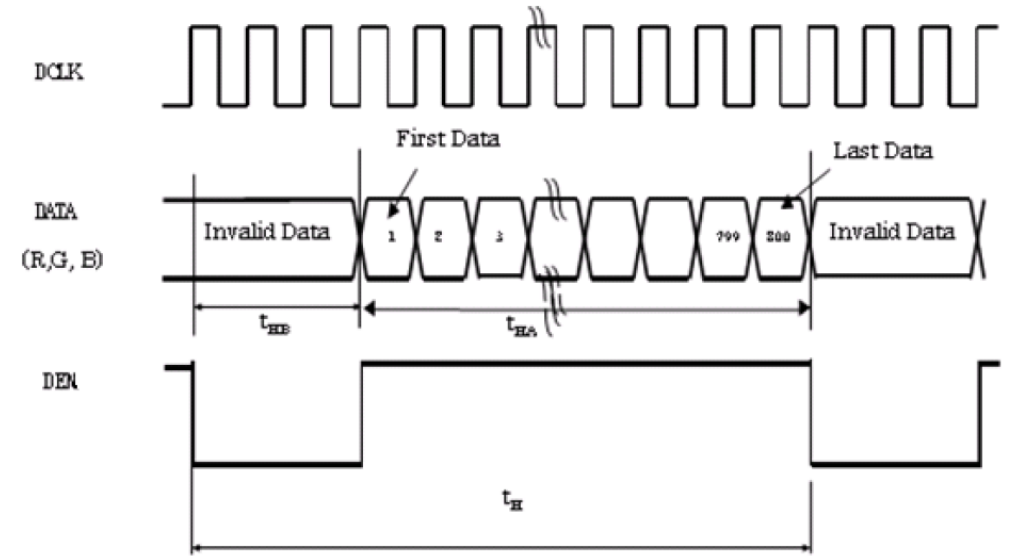
7.1. Timing characteristic of Panel (DE only mode)

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	Note
DCLK	Dot Clock	$1/t_{CLK}$	26	29	33	MHz	
	DCLK pulse duty	Tcwh	40	50	60	%	
DE	Setup Time	Tesu	4	-	-	ns	
	Hold time	Tehd	2	-	-	ns	
	Horizontal Period	t_H	908	928	948	t_{CLK}	
	Horizontal Valid	t_{HA}		800		t_{CLK}	
	Horizontal Blank	t_{HB}	108	128	148	t_{CLK}	
	Vertical Period	t_V	515	525	535	t_H	
	Vertical Valid	t_{VA}		480		t_H	
	Vertical Blank	t_{VB}	35	45	55	t_H	
SYNC	HSYNC Setup Time	Thst	4	-	-	ns	
	HSYNC Hold Time	Thhd	2	-	-	ns	
	VSYNC Setup Time	Tvst	4	-	-	ns	
	VSYNC Hold Time	Tvhd	2	-	-	ns	
	Horizontal Period	th	908	928	948	t_{CLK}	
	Horizontal Pulse Width	thpw	-	48	-	t_{CLK}	thb + thpw=88DCLK is fixed
	Horizontal Back Porch	thb	-	40	-	t_{CLK}	
	Horizontal Front Porch	thfp	20	40	60	t_{CLK}	
	Horizontal Valid	thd		800		t_{CLK}	
	Vertical Period	tv	-	525	-	th	
	Vertical Pulse Width	tvpw	-	3	-	th	tvpw + tvb = 32th is fixed
	Vertical Back Porch	tvb	-	29	-	th	
	Vertical Front Porch	tvfp	3	13	23	th	
	Vertical Valid	tvd		480		th	
DATA	Setup Time	Tdsu	4	-	-	ns	
	Hold Time	Tdhd	2	-	-	ns	

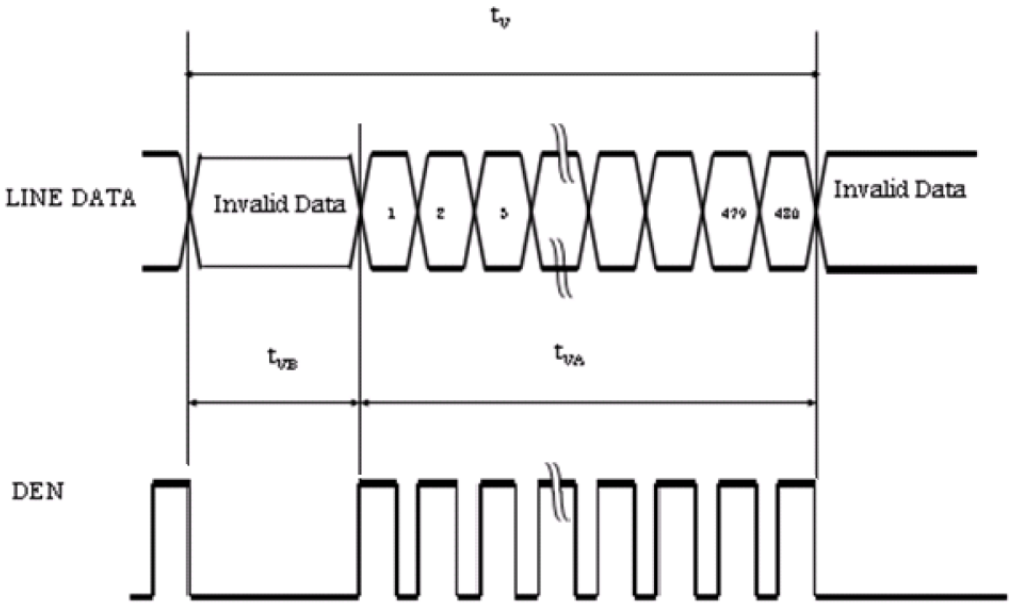


DE mode

Horizontal timing：

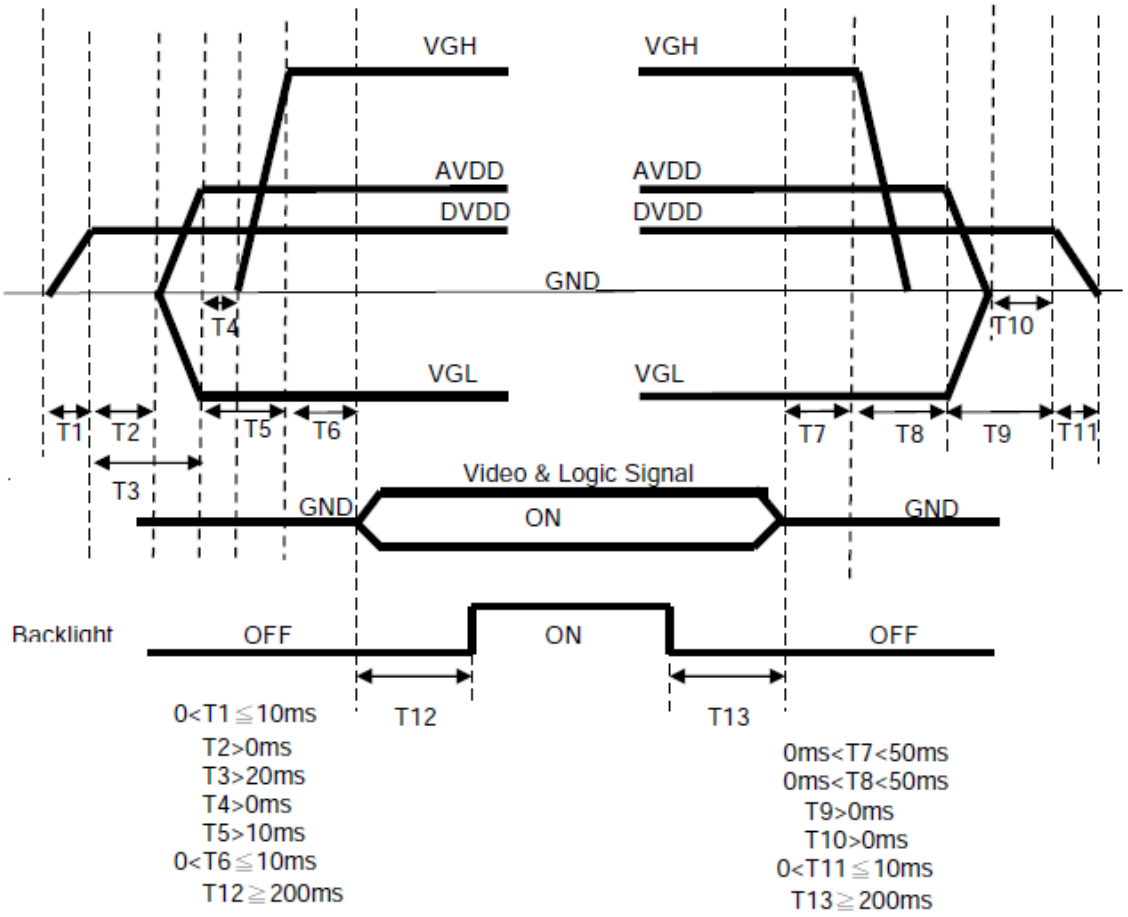


Vertical timing：



7.2. Power ON/OFF Timing

Power On : DVDD→AVDD/VGL→VGH→Video &Logic Signal
Power Off : Video &Logic Signal→VGH→AVDD/VGL→DVDD



8. Touch Panel SPECIFICATION

8.1 Basic Characteristic

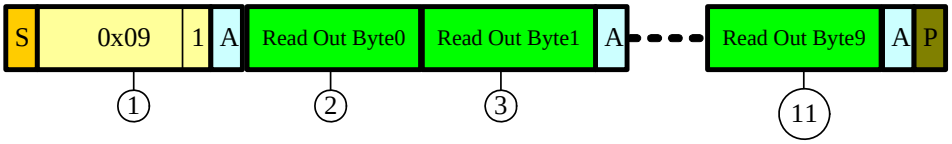
ITEM	SPECIFICATION
Type	Projective Capacitive Touch Panel
Activation	Two-fingers or Signal-finger
X/Y Position Reporting	Absolute Position
Touch Force	No contact pressure required
Calibration	No need for calibration
Report Rate	Approx 100 points/sec
Control IC	EETI EXC7200 +EX5404

8.2 Interface

CN6		
Pin No.	**Symbol**	**Function**
1	DGND	USB POWER GND
2	SDA	I2C DATA
3	SCL	I2C CLOCK
4	VDD	3.3V Regulated
5	IRQ	Interrupt Request pin
6	RST	Reset pin to Master Chip

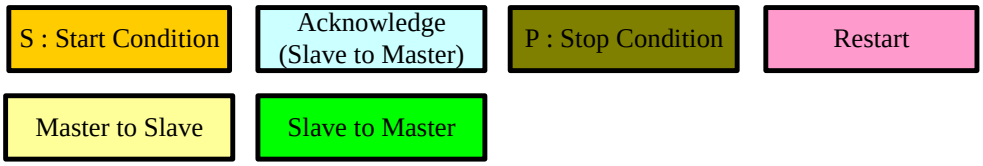
8.3 7-bit I2C address = 0x04.

The complete I2C data format:

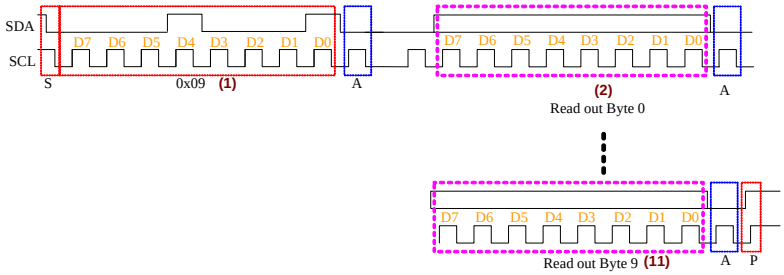


① // 7bit I2C address =0x04 Send I2C Slave address 0x04 Bit1=1 for:write

② ~ ⑪ // Read out Byte0~byte10



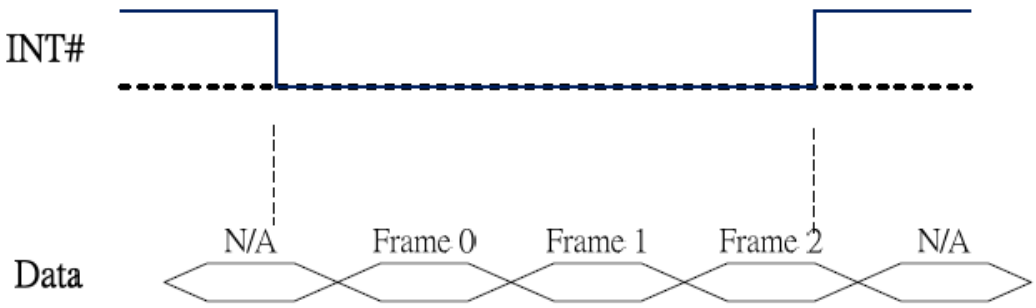
The detail Timing



Read Out Byte	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
BYTE0	0	0	0	0	0	1	0	0
	Report ID = 0x04							
BYTE1								
	BIT[7] : When this bit =1 is Valid touch. BIT[6:2] : Contact ID. BIT[1] : In range bit , this bit is always 1. BIT[0] : This bit 1 for touch down , 0 for touch lift Example: 0x83: 1st Touch Down. 0x82: 1st Touch Lift. 0x87: 2nd Touch Down. 0x86: 2nd Touch Lift.							
BYTE2	Touch X [3:0]				Don't care			
	X Coordination Bit [3:0] in BYTE2 Bit [7: 4]							

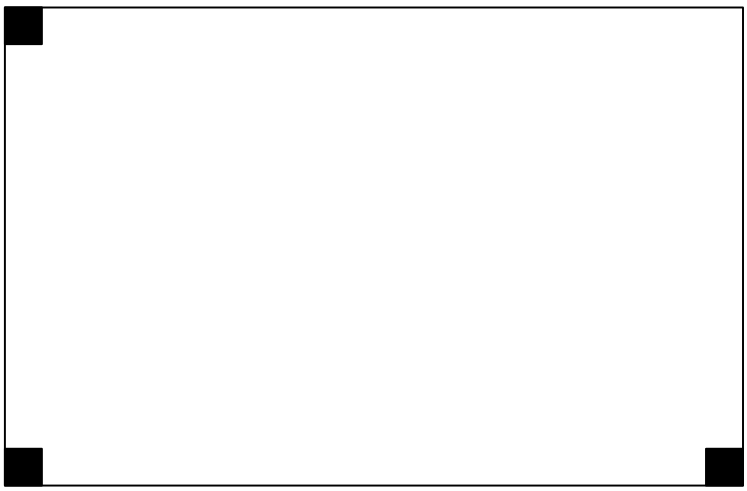
BYTE3	Touch X [15:4]							
	X Coordination Bit [15:4] in BYTE3							
BYTE4	Touch Y [3:0]				Don't care			
	Y Coordination Bit [3:0] in BYTE2 Bit [7: 4]							
BYTE5	Touch Y [15:4]							
	Y Coordination Bit [15:4] in BYTE3							
BYTE6								
	Reserved							
BYTE7								
	Reserved							
BYTE8								
	Reserved							
BYTE9								
	Reserved							

Interrupt starts at touch-down event and ends at touch-lift event.
During the period, coordinate report rate is related to the rate which host issues read-coordinate command.



Coordinate

Origin (0,0)



(0, 2047) (2047,2047)

Sample Code :

```
/*****************************************************************************
* Function Name    : u8 EXC7200_I2C_CoordRead(u8 Slave_Addr,u8 read_Nbyte , u16    *ByteReturn)
* Description      : Use GPIO Read N byte data from Slave device (Addr) to Host
* Input              : u8 Slave_Addr , Ex:0x04
*                      : u8 read_Nbyte
*                      : Point for touch information
*                         ByteReturn [0] = Point X1
*                         ByteReturn [1] = Point Y1
*                         ByteReturn [2] = T.B.D
*                         ByteReturn [3] = Point Y2
*                         ByteReturn [4] = Point Y2
*                         ByteReturn [5] = T.B.D
* Return
*
* #define EXC7200_I2C_CoordRead_1stTouch_Down    0x01
* #define EXC7200_I2C_CoordRead_1stTouch_Lift    0x81
* #define EXC7200_I2C_CoordRead_2ndTouch_Down    0x02
* #define EXC7200_I2C_CoordRead_2ndtTouch_Lift    0x82
*****************************************************************************/

#define EXC7200_I2C_CoordRead_1stTouch_Down    0x01
#define EXC7200_I2C_CoordRead_1stTouch_Lift    0x81
#define EXC7200_I2C_CoordRead_2ndTouch_Down    0x02
#define EXC7200_I2C_CoordRead_2ndtTouch_Lift    0x82
#define EXC7200_I2C_CoordRead_error    0x00

u8 EXC7200_I2C_CoordRead(u8 Slave_Addr,u8 read_Nbyte , u16    *ByteReturn )
{
   u8 *pBuffer ,i ;
   u8 Byte[10] ;


   IO_I2C_start();    // Start Condiction
   IO_I2C_reg_cmd_para((Slave_Addr<<1)+1); // Send I2C Slave address+1 Bit0=1 for:read
                pBuffer=IO_I2C_read_Nbyte(read_Nbyte);      // read 10 byte

                for(i=0;i<10;i++)
                    {
                            Byte[i]=*pBuffer;
                            pBuffer++;
                    }

                if( (Byte[1]==0x83) | (Byte[1]==0x82))    //
                {
                     ByteReturn[0]=((u16)((Byte[3]&0x00ff)<<4))+((u16)((Byte[2]&0x00f0)>>4)); //Point X1
                      ByteReturn[1]=((u16)((Byte[5]&0x00ff)<<4))+((u16)((Byte[4]&0x00f0)>>4)); //Point Y1
                      ByteReturn[2]= 0xFFFF;
                      ByteReturn[3]= 0xFFFF;
                      ByteReturn[4]= 0xFFFF;
                      ByteReturn[5]= 0xFFFF;
                      Previous_X1=ByteReturn[0];
                      Previous_Y1=ByteReturn[1];

                      if ( (Byte[1]==0x83))
                      {
                              return EXC7200_I2C_CoordRead_1stTouch_Down;
                      }
                      if ( (Byte[1]==0x82))
                      {
                              return EXC7200_I2C_CoordRead_1stTouch_Lift;
                      }
```

```
    }
                if( (Byte[1]==0x87) | (Byte[1]==0x86))    //
                {
                    ByteReturn[3]=((u16)((Byte[3]&0x00ff)<<4))+((u16)((Byte[2]&0x00f0)>>4)); //Point X1
                     ByteReturn[4]=((u16)((Byte[5]&0x00ff)<<4))+((u16)((Byte[4]&0x00f0)>>4)); //Point Y1
                     ByteReturn[5]= 0xFFFF;
                     ByteReturn[0]= Previous_X1;
                     ByteReturn[1]= Previous_Y1;
                     ByteReturn[2]= Previous_Z1;

                     if ( (Byte[1]==0x87))
                     {
                             return EXC7200_I2C_CoordRead_2ndTouch_Down;
                     }
                     if ( (Byte[1]==0x86))
                     {
                             return EXC7200_I2C_CoordRead_2ndtTouch_Lift;
                     }

    }


    return EXC7200_I2C_CoordRead_error;

}


// Example Interrupt function
void EXC7200_I2C_EXT_INT (void)
{

    u16 DataBuffer[10];
    u32 TPX1,TPY1,TPX2,TPY2;
    u16 Temp_X=0xFFFF,Temp_Y=0xFFFF;
    u16 temp;
    u8 Touch_size=4;
    u8    RStatus;

       while((ReadINT1())==0)
       {
                                    RStatus = EXC7200_I2C_CoordRead(0x04,10,DataBuffer);


                                    TPX1=(u16) DataBuffer[0]; //first X position
                                    TPY1=(u16) DataBuffer[1]; //first Y position
                                    TPX2=(u16) DataBuffer[3]; //second point X position
                                    TPY2=(u16) DataBuffer[4]; //second point Y position


                                     // Remapping Touch X,Y to LCD X,Y
                                    TPX1*=Current_LCM_ID.LCD_X_Max;
                                     TPX1/=2048;
                                    TPY1*=Current_LCM_ID.LCD_Y_Max;
                                    TPY1/=2048;
                                    TPX2*=Current_LCM_ID.LCD_X_Max;
                                     TPX2/=2048;
                                    TPY2*=Current_LCM_ID.LCD_Y_Max;
                                    TPY2/=2048;


                                   switch (RStatus)
```

```
                        {
                                case (EXC7200_I2C_CoordRead_1stTouch_Down):
                        GUI_CircleFill(TPX1, TPY1, 2, rand()%0xFFFF);
                                        // Do 1st touch down Function
                                        break;
                                case (EXC7200_I2C_CoordRead_1stTouch_Lift):
                        GUI_RectangleFill(TPX1-4, TPY1-4,TPX1+4, TPY1+4 ,rand()%0xFFFF);
                                        // Do 1st touch Lift Function

                                        break;
                                case (EXC7200_I2C_CoordRead_2ndTouch_Down):
                        GUI_CircleFill(TPX1, TPY1, 2, RGB(128,128,128));
                        GUI_CircleFill(TPX2, TPY2, 2, RGB(128,128,0));
                                        // Do 2nd touch Down Function
                                        break;
                                case (EXC7200_I2C_CoordRead_2ndtTouch_Lift):
                        GUI_RectangleFill(TPX1-4, TPY1-4,TPX1+4, TPY1+4 ,RGB(128,128,128));
                        GUI_RectangleFill(TPX2-4, TPY2-4,TPX2+4, TPY2+4 ,RGB(128,128,0));
                                        // Do 2nd touch Lift Function
                                        break;
                                default:
                                        break;
                        }

                }

}
```

9 RELIABILITY TEST CONDITIONS

Test Item	Test Conditions	Note
High Temperature Operation	80±3°C , t=240 hrs	
Low Temperature Operation	-30±3°C , t=240 hrs	
High Temperature Storage	80±3°C , t=240 hrs	1,2
Low Temperature Storage	-30±3°C , t=240 hrs	1,2
Thermal Shock Test	-30°C ~ 80°C 30 m in. ~ 30 min. (1 cycle) Total 100cycle	1,2
Storage Humidity Test	60 °C, Humidity 90%, 240 hrs	1,2
Vibration Test (Packing)	Sweep frequency : 10 ~ 500 ~ 10 Hz/1min Amplitude : 0.75mm Test direction : X.Y.Z/3 axis Duration : 30min/each axis	2
Image Sticking	25 ℃± 2 ℃ ; 2hrs	3

Note 1 : Condensation of water is not permitted on the module.

Note 2 : The module should be inspected after 1 hour storage in normal conditions (15-35°C , 45-65%RH).

Definitions of life end point :

- Current drain should be smaller than the specific value.
- Function of the module should be maintained.
- Appearance and display quality should not have degraded noticeably.
- Contrast ratio should be greater than 50% of the initial value.

Note 3 : Operation with test pattern sustained for 2 hours, then change to gray pattern immediately. After 5 mins, the mura must be disappeared completely .

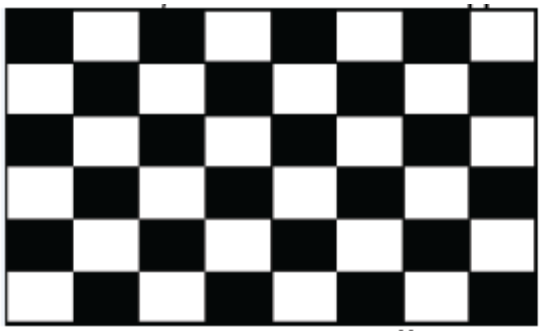
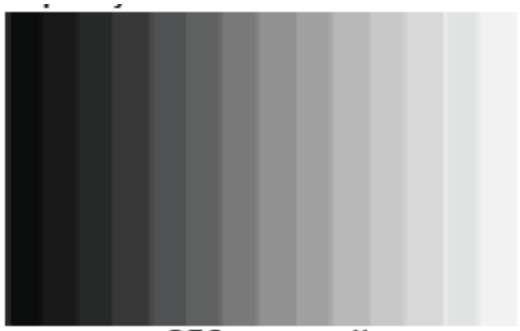


Image Sticking –pattern



256-Gray pattern

10 USE PRECAUTIONS

10.1 Handling precautions

1) The polarizing plate may break easily so be careful when handling it. Do not touch, press or rub it with a hard-material tool like tweezers.
2) Do not touch the polarizing plate surface with bare hands so as not to make it dirty. If the surface or other related part of the polarizing plate is dirty, soak a soft cotton cloth or chamois leather in benzine and wipe off with it. Do not use chemical liquids such as acetone, toluene and isopropyl alcohol. Failure to do so may bring chemical reaction phenomena and deteriorations.
3) Remove any spit or water immediately. If it is left for hours, the suffered part may deform or decolorize.
4) If the LCD element breaks and any LC stuff leaks, do not suck or lick it. Also if LC stuff is stuck on your skin or clothing, wash thoroughly with soap and water immediately.

10.2 Installing precautions

1) The PCB has many ICs that may be damaged easily by static electricity. To prevent breaking by static electricity from the human body and clothing, earth the human body properly using the high resistance and discharge static electricity during the operation. In this case, however, the resistance value should be approx. 1MΩ and the resistance should be placed near the human body rather than the ground surface. When the indoor space is dry, static electricity may occur easily so be careful. We recommend the indoor space should be kept with humidity of 60% or more. When a soldering iron or other similar tool is used for assembly, be sure to earth it.
2) When installing the module and ICs, do not bend or twist them. Failure to do so may crack LC element and cause circuit failure.
3) To protect LC element, especially polarizing plate, use a transparent protective plate (e.g., acrylic plate, glass etc) for the product case.
4) Do not use an adhesive like a both-side adhesive tape to make LCD surface (polarizing plate) and product case stick together. Failure to do so may cause the polarizing plate to peel off.

10.3 Storage precautions

1) Avoid a high temperature and humidity area. Keep the temperature between 0°C and 35°C and also the humidity under 60%.
2) Choose the dark spaces where the product is not exposed to direct sunlight or fluorescent light.
3) Store the products as they are put in the boxes provided from us or in the same conditions as we recommend.

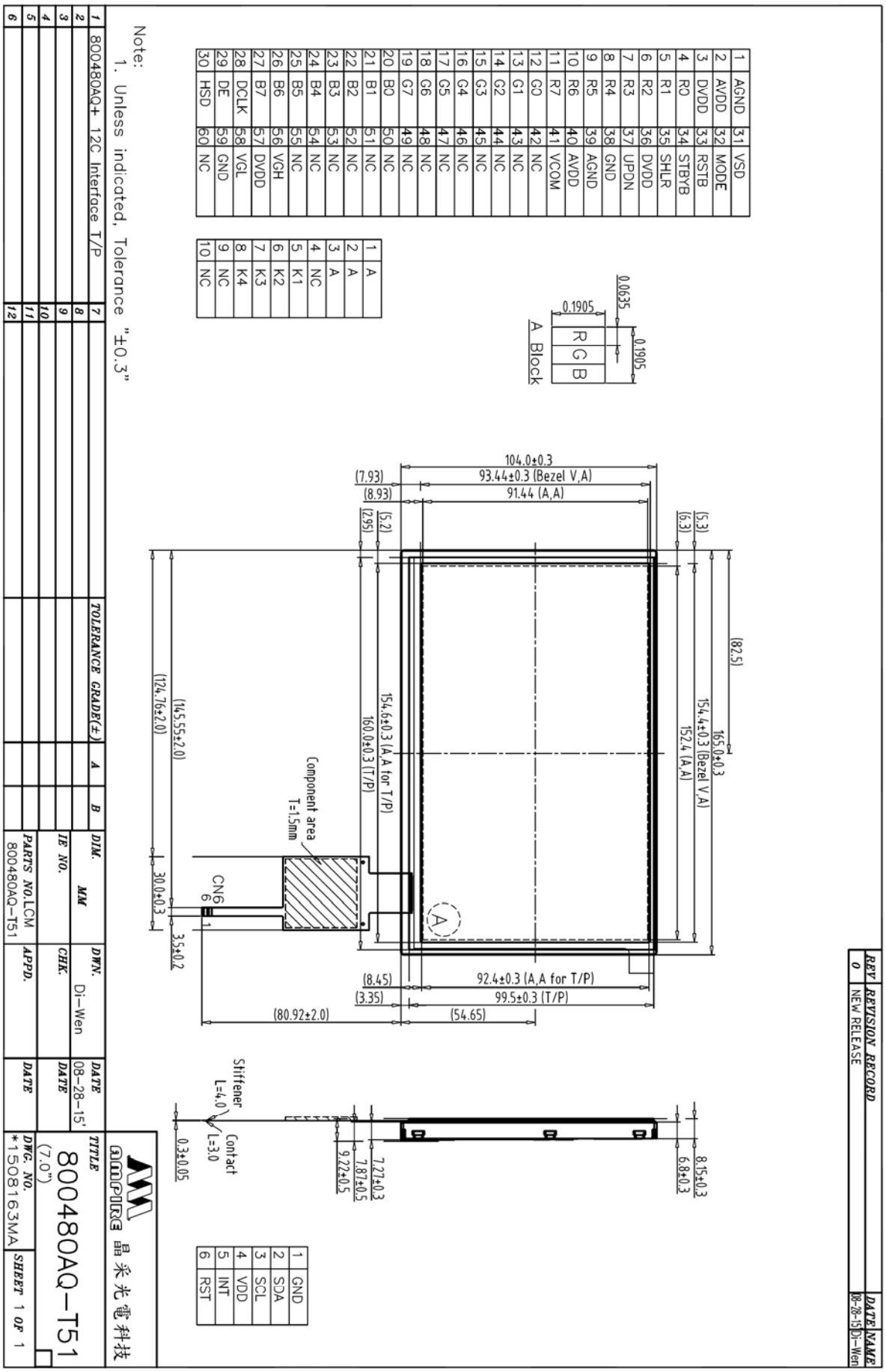
10.4 Operating precautions

1) Do not boost the applied drive voltage abnormally. Failure to do so may break ICs. When applying power voltage, check the electrical features beforehand and be careful. Always turn off the power to the LC module controller before removing or inserting the LC module input connector. If the input connector is removed or inserted while the power is turned on, the LC module internal circuit may break.
2) The display response may be late if the operating temperature is under the normal standard, and the display may be out of order if it is above the normal standard. But this is not a failure; this will be restored if it is within the normal standard.
3) The LCD contrast varies depending on the visual angle, ambient temperature, power voltage etc. Obtain the optimum contrast by adjusting the LC dive voltage.
4) When carrying out the test, do not take the module out of the low-temperature space suddenly. Failure to do so will cause the module condensing, leading to malfunctions.
5) Make certain that each signal noise level is within the standard (L level: 0.2Vdd or less and H level: 0.8Vdd or more) even if the module has functioned properly. If it is beyond the standard, the module may often malfunction. In addition, always connect the module when making noise level measurements.
6) The CMOS ICs are incorporated in the module and the pull-up and pull-down function is not adopted for the input so avoid putting the input signal open while the power is ON.
7) The characteristic of the semiconductor element changes when it is exposed to light emissions, therefore ICs on the LCD may malfunction if they receive light emissions. To prevent these malfunctions, design and assemble ICs so that they are shielded from light emissions.
8) Crosstalk occurs because of characteristics of the LCD. In general, crosstalk occurs when the regularized display is maintained. Also, crosstalk is affected by the LC drive voltage. Design the contents of the display, considering crosstalk.

10.5 Other

1) Do not disassemble or take the LC module into pieces. The LC modules once disassembled or taken into pieces are not the guarantee articles.
2) Do not keep the LCD at the same display pattern continually. The residual image will happen and it will damage the LCD. Please use screen saver.
3) AMIPRE will provide one year warrantee for all products and three months warrantee for all repairing products.

11 OUTLINE DIMENSION



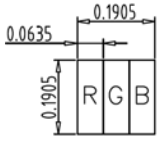
1	AGND	31	VSD
2	AVDD	32	MODE
3	DVDD	33	RSTB
4	R0	34	STBYB
5	R1	35	SHLR
6	R2	36	DVDD
7	R3	37	UPDN
8	R4	38	GND
9	R5	39	AGND
10	R6	40	AVDD
11	R7	41	VCOM
12	G0	42	NC
13	G1	43	NC
14	G2	44	NC
15	G3	45	NC
16	G4	46	NC
17	G5	47	NC
18	G6	48	NC
19	G7	49	NC
20	B0	50	NC
21	B1	51	NC
22	B2	52	NC
23	B3	53	NC
24	B4	54	NC
25	B5	55	NC
26	B6	56	VGH
27	B7	57	DVDD
28	DCLK	58	VGL
29	DE	59	GND
30	HSD	60	NC

1	A
2	A
3	A
4	NC
5	K1
6	K2
7	K3
8	K4
9	NC
10	NC

1	GND
2	SDA
3	SCL
4	VDD
5	INT
6	RST

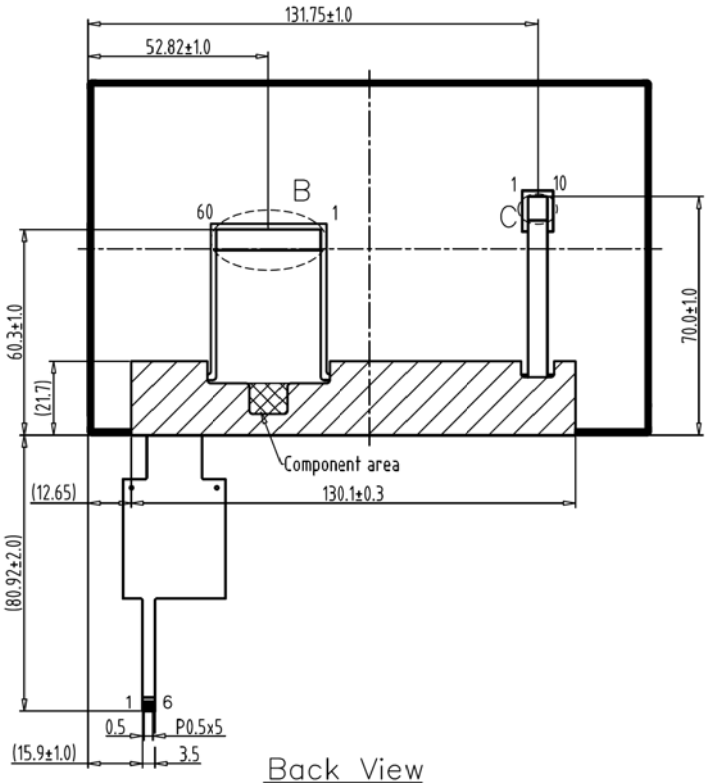
REV	REVISION RECORD	DATE	NAME
0	NEW RELEASE	08-28-28	Di-Wen

1	AGND	31	VSD
2	AVDD	32	MODE
3	DVDD	33	RSTB
4	R0	34	STBYB
5	R1	35	SHLR
6	R2	36	DVDD
7	R3	37	UPDN
8	R4	38	GND
9	R5	39	AGND
10	R6	40	AVDD
11	R7	41	VCOM
12	G0	42	NC
13	G1	43	NC
14	G2	44	NC
15	G3	45	NC
16	G4	46	NC
17	G5	47	NC
18	G6	48	NC
19	G7	49	NC
20	B0	50	NC
21	B1	51	NC
22	B2	52	NC
23	B3	53	NC
24	B4	54	NC
25	B5	55	NC
26	B6	56	VGH
27	B7	57	DVDD
28	DCLK	58	VGL
29	DE	59	GND
30	HSD	60	NC

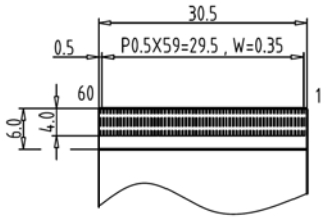


A Block

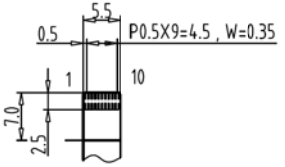
1	A
2	A
3	A
4	NC
5	K1
6	K2
7	K3
8	K4
9	NC
10	NC



Back View



B Block



C Block

1	GND
2	SDA
3	SCL
4	VDD
5	INT
6	RST

Note:
1. Unless indicated, Tolerance "±0.3"

1	800480AQ+ 12C Interface T/P	7		TOLERANCE GRADE(±)	A	B	DIM. MM	DWN. Di-Wen	DATE 08-28-15'	TITLE 800480AQ-T51 (7.0")	
2		8					IE NO.	CHK.	DATE		
3		9									
4		10									
5		11					PARTS NO. LCM-1 800480AQ-T51	APPD.	DATE	DWG. NO. *1508164MA	SHEET 1 OF 1
6		12									

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