DISPLAY Elektronik GmbH

DATA SHEET

LCD MODULE

DEM 800480T1 TMH-PW-N

(A-TOUCH)

Product Specification ***Version:0***

21.03.2022

GENERAL SPECIFICATION

MODULE NO. :

DEM 800480T1 TMH-PW-N (A-TOUCH)

CUSTOMER

VERSION NO.	CHANGE DESCRIPTION	DATE
0	Original Version	21.03.2022

PREPARED BY: YK DATE: 21.03.2022

APPROVEDBY: WH DATE: 21.03.2022

CONTENTS

1. GENERAL SPECIFICATIONS

ITEM	STANDARD VALUE	UNIT
LCD SIZE	8.0′ TFT	inch
LCD TYPE	TFT/TN/ NORMALLY WHITE/TRANSMISSIVE	
MODULE SIZE	192.80 x 116.90 x 7.90	mm
ACTIVE AREA	176.64 x 99.36	mm
PIXEL PITCH (W*H)	0.2208 x 0.2070	
NUMBER OF PIXELS	800 x 480	
DRIVER IC	NT52001B+NT39419B	
INTERFACE TYPE	RGB	
RECOMMEND VIEWING DIRECTION	12	O’clock
GRAY SCALE INVERSION DIRECTION	6	O’clock
COLORS	16.7 MILLION	
BACKLIGHT TYPE	27-DIES WHITE LED	
TOUCH PANEL TYPE	RTP	

TOUCH PANEL FEATURES:

Type:	4-Wire Analog Resistive Touch Panel
Input Mode:	Stylus or Finger
ITO Film:	200μm
ITO Glass:	1.1T
Connector:	FPC

Mechanical Characteristics

Surface Hardness: 3H or more (according to JIS-K5400).

Optical Characteristics

Transmittance: 80% Typical.

Rating

1. Maximum Voltage

Less than DC 7 volts.

2. Operating Temperature Range

－20℃ to 60℃ (Humidity: 20% RH to 70% RH, No condensation of dew).

3. Storage Temperature Range

－30℃ to 70℃ (Humidity: 20% RH to 80% RH, No condensation of dew).

Electrical Characteristics

1. Resistance between Terminals

Direction “Y”: 150~400Ω

Direction “X”: 400~1000Ω

2. Linearity

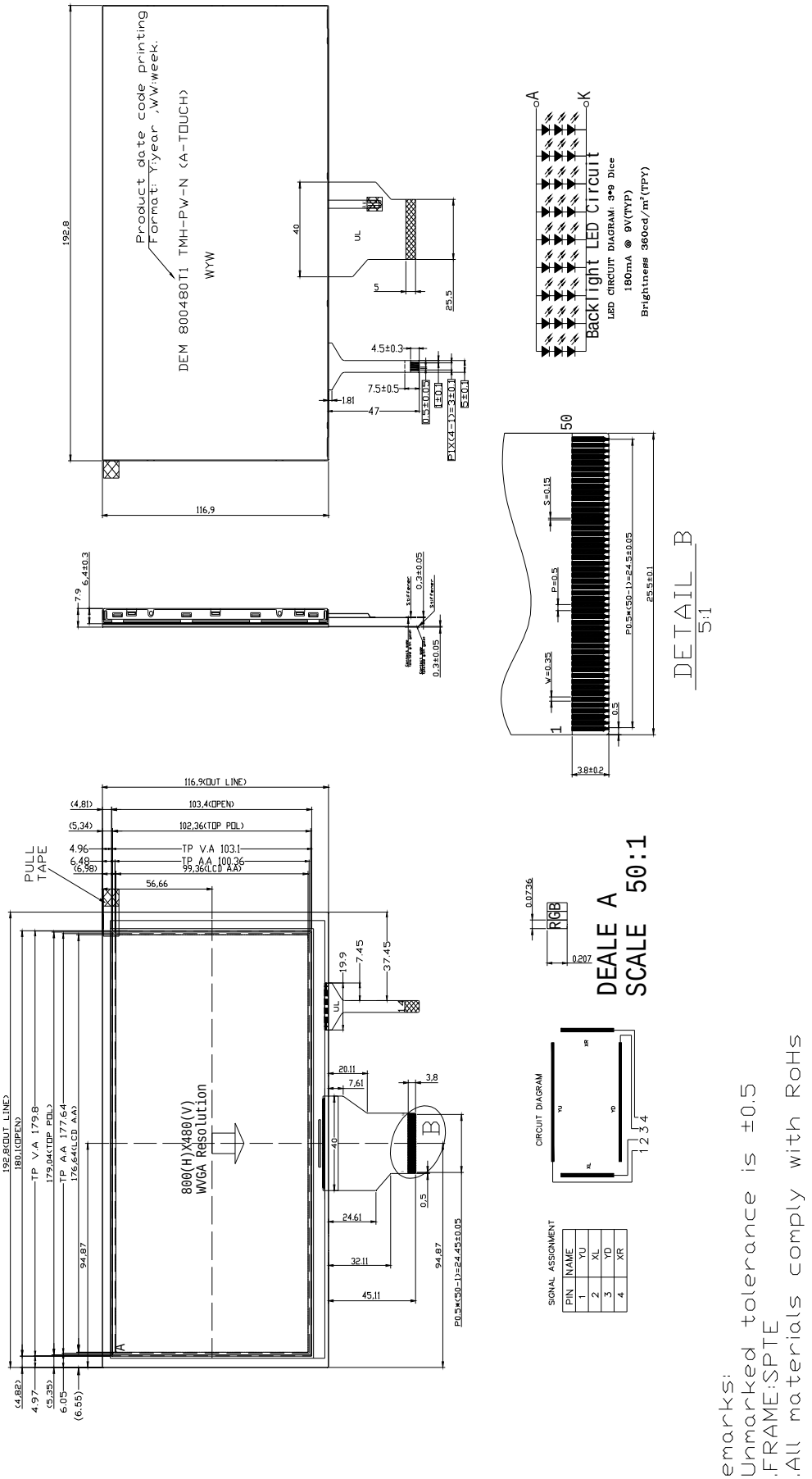
X axis: ±1.5%

Y axis: ±1.5%

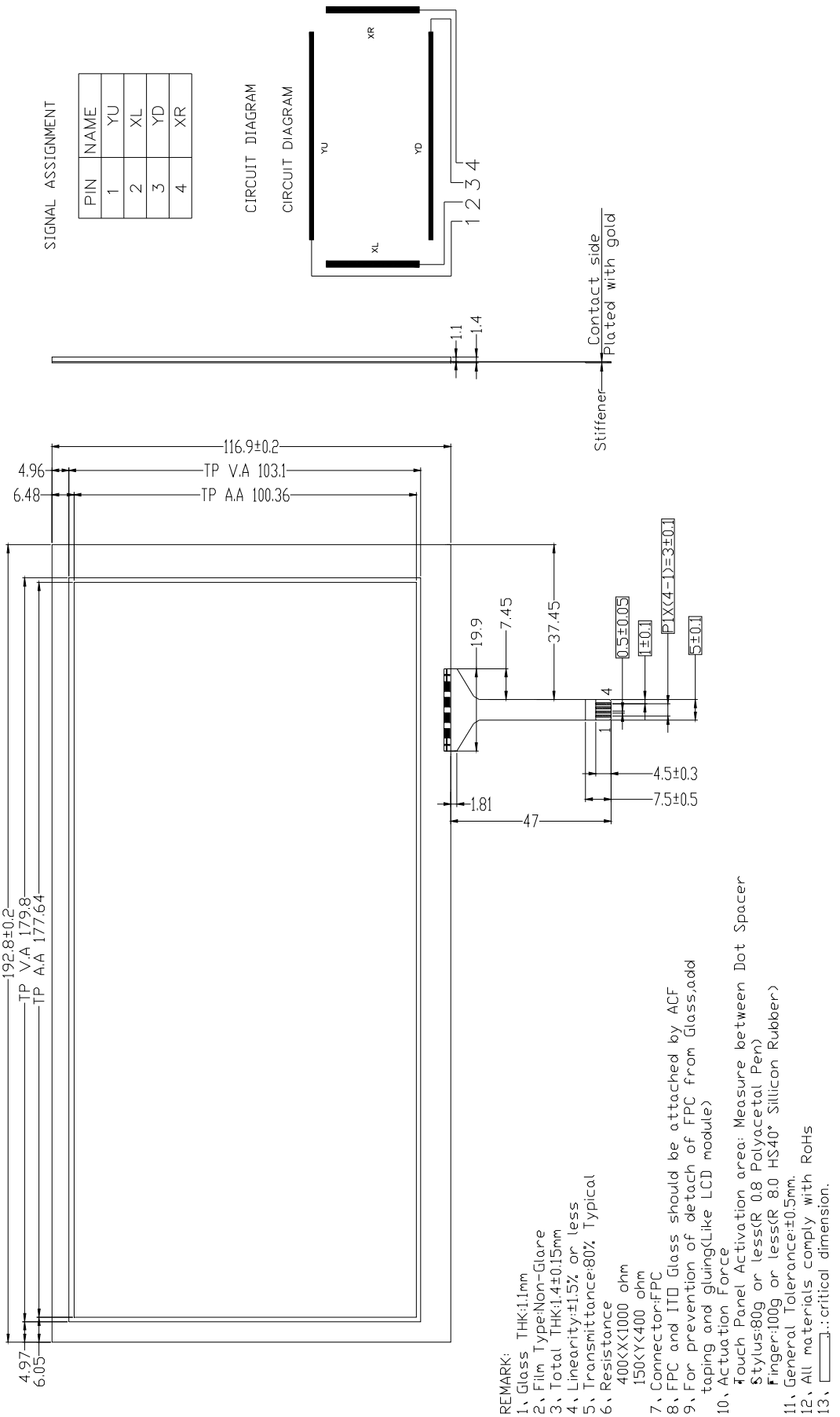
3. Insulation Resistance: 20MΩ or more at DC 25 V.

4. Chattering Time: 10 msec or less at 100kΩ Pull-up.

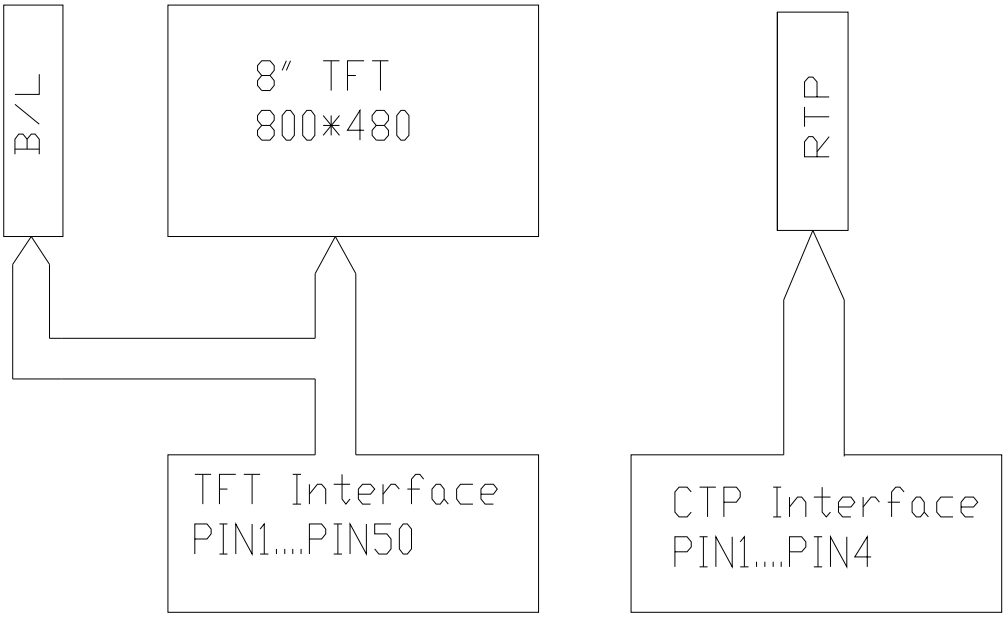
2. EXTERNAL DIMENSIONS



TOUCH PANEL:


SIGNAL ASSIGNMENT
PIN NAME
1 YU
2 XL
3 YD
4 XR
CIRCUIT DIAGRAM
CIRCUIT DIAGRAM
YU
XL
YD
XR
1 2 3 4
1.1
1.4
Contact side
Plated with gold
Stiffener
116.9±0.2
4.96
TP V.A 103.1
6.48
TP A.A 100.36
192.8±0.2
TP V.A 179.8
TP A.A 177.64
4.97
6.05
19.9
7.45
37.45
0.5±0.05
1±0.1
P1X(4-1)=3±0.1
5±0.1
4.5±0.3
7.5±0.5
1.81
47
REMARK:
1、Glass THK:1.1mm
2、Film Type:Non-Glare
3、Total THK:1.4±0.15mm
4、Linearity:±1.5% or less
5、Transmittance:80% Typical
6、Resistance
400<X<1000 ohm
150<Y<400 ohm
7、Connector:FPC
8、FPC and ITO Glass should be attached by ACF
9、For prevention of detach of FPC from Glass,add taping and gluing(Like LCD module)
10、Actuation Force
Touch Panel Activation area: Measure between Dot Spacer
Stylus:80g or less(R 0.8 Polyacetal Pen)
Finger:100g or less(R 8.0 HS40° Silicon Rubber)
11、General Tolerance:±0.5mm.
12、All materials comply with RoHs
13、▭:critical dimension.

3. BLOCK DIAGRAM



4. PIN ASSIGNMENT

PIN NO.	SYMBOL	DESCRIPTION
1	A	LED Anode
2	A	LED Anode
3	K	LED Cathode
4	K	Power supply
5	GND	Power ground
6	VCOM	Common Voltage
7	VDD	Power supply
8	MODE	DE / SYNC mode select H : DE mode. L : HSD/VSD mode
9	DE	Data input enable
10	VS	Vertical sync signal; negative polarity
11	HS	Horizontal sync signal; negative polarity
12	B7	Blue data
13	B6	Blue data
14	B5	Blue data
15	B4	Blue data
16	B3	Blue data
17	B2	Blue data
18	B1	Blue data
19	B0	Blue data
20	G7	Green data
21	G6	Green data
22	G5	Green data
23	G4	Green data
24	G3	Green data
25	G2	Green data
26	G1	Green data
27	G0	Green data
28	R7	Red data
29	R6	Red data
30	R5	Red data
31	R4	Red data
32	R3	Red data
33	R2	Red data

34	R1	Red data
35	R0	Red data
36	GND	Power ground
37	DCLK	Clock for Input Data
38	GND	Power ground
39	L/R	Source Right or Left sequence control. Normally pulled high SHLR = " L ", shift left: last data = S1←S2←S3.....←S1200 = first data. SHLR = " H ", shift right: first data = S1→S→S3.....→S1200 = last data.
40	U/D	Gate Up or Down scan control. Normally pulled low. UPDN = "L", STV2 output vertical start pulse and UD pin output logical "0" to Gate driver. UPDN = "H", STV1 output vertical start pulse and UD pin output logical "1" to Gate driver.
41	VGH	Gate ON Voltage
42	VGL	Gate OFF Voltage
43	AVDD	Power for Analog Circuit
44	RESET	Global reset pin
45	NC	Not connection
46	VCOM	Common Voltage
47	DITHB	Dithering function enable control. Normally pulled high DITHB = "1", Disable internal dithering function DITHB = "0", Enable internal dithering function
48	GND	Power ground
49	NC	Not connection
50	NC	Not connection

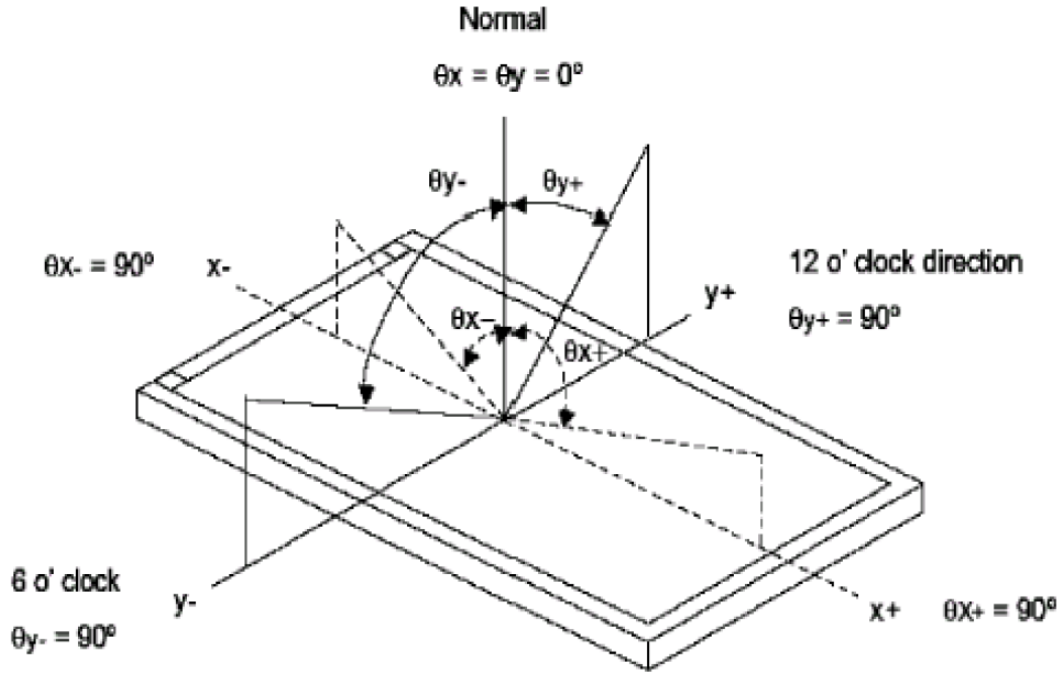
TOUCH PANEL:

PIN NO.	SYMBOL	DESCRIPTION
1	YU	Touch Panel Pin UP
2	XL	Touch Panel Pin LEFT
3	YD	Touch Panel Pin DOWN
4	XR	Touch Panel Pin RIGHT

5. OPTICAL CHARACTERISTICS

ITEM		SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
				MIN	TYP.	MAX		
Luminance		L			360	-	Cd/㎡	
Contrast ratio		CR	θ =0 °		500			
Response time	Rising	TR	25℃		10	20	ms	
	Falling	TF			15	30		
CIE COLOUR COORDINATE	RED	XR	VIEWING NORMAL ANGLE	0.574	0.589	0.604		
		YR		0.317	0.332	0.347		
	GREEN	XG		0.128	0.143	0.158		
		YG		0.116	0.131	0.146		
	BLUE	XB		0.293	0.308	0.323		
		YB		0.543	0.558	0.573		
	WHITE	XW		0.296	0.311	0.326		
		YW		0.328	0.343	0.358		
VIEWING ANGLE	Hor.	θ x+	CR≥10	60	70		Degree	
		θ x-		60	70			
	Ver.	θ y+		40	50			
		θ y-		60	70			

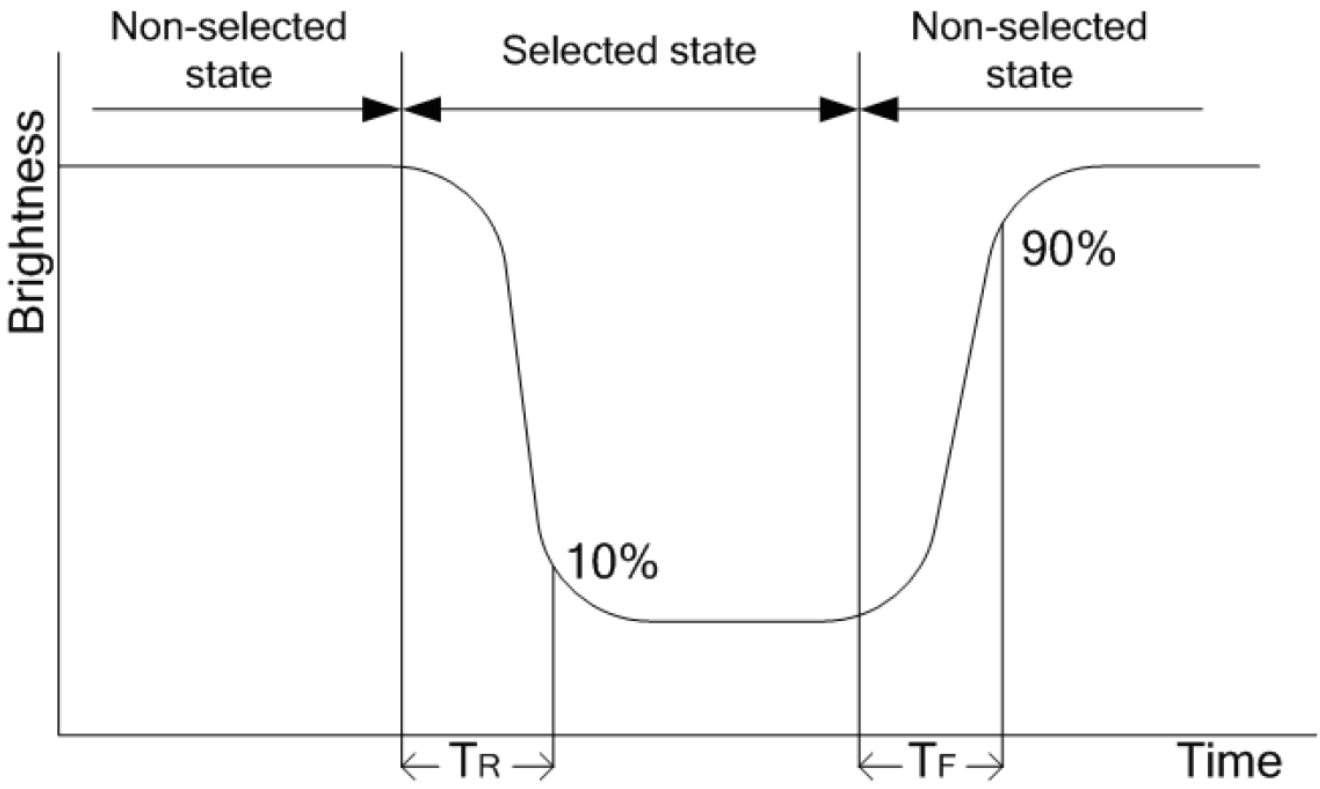
Note 1 : Definition of Viewing Angle θ_x and θ_y :



Note 2: Definition of contrast ratio CR:

$$CR = \frac{\text{Brightness of non-selected dots (white)}}{\text{Brightness of selected dots (black)}}$$

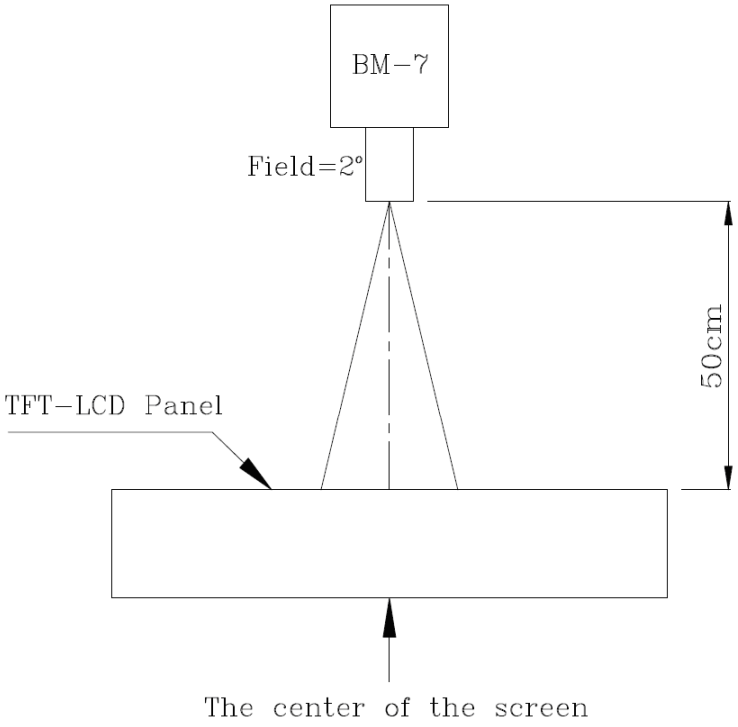
Note 3: Definition of response time (T_R, T_F)



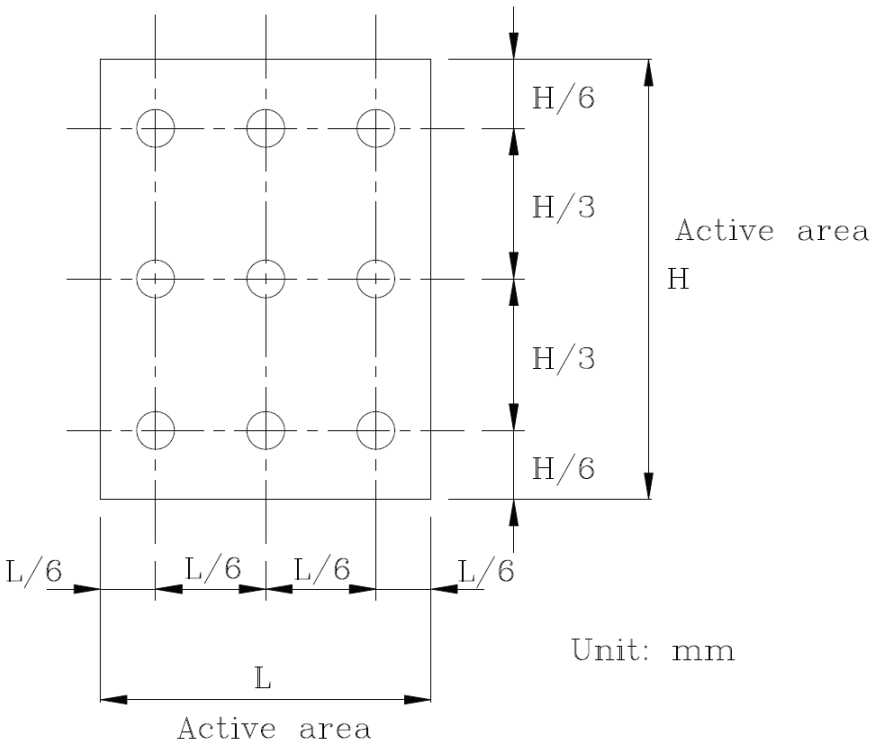
Note 4: Definition of Luminance

①The Brightness Test Equipment Setup

Field=2° (As measuring "black" image, field=2° is the best testing condition)



②The Brightness Test Point Setup



6. ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Power Supply Voltage	VDD	-0.5	5.0	V
Operating Temperature	Top	-20	+70	℃
Storage Temperature	Tst	-30	+80	℃

7. ELECTRICAL CHARACTERISTICS

7.1 BLACKLIGHT DRIVING CONDITIONS

ITEM	SYMBOL	SPECIFICATIONS			UNIT	REMARK
		MIN	TYP.	MAX		
Supply Voltage	Vf		9		V	
Supply Current	IL		180		mA	
Power Consumption	P		1.62		W	
LED Lifetime			50,000		H_r	

7.2 ELECTRICAL CHARACTERISTICS

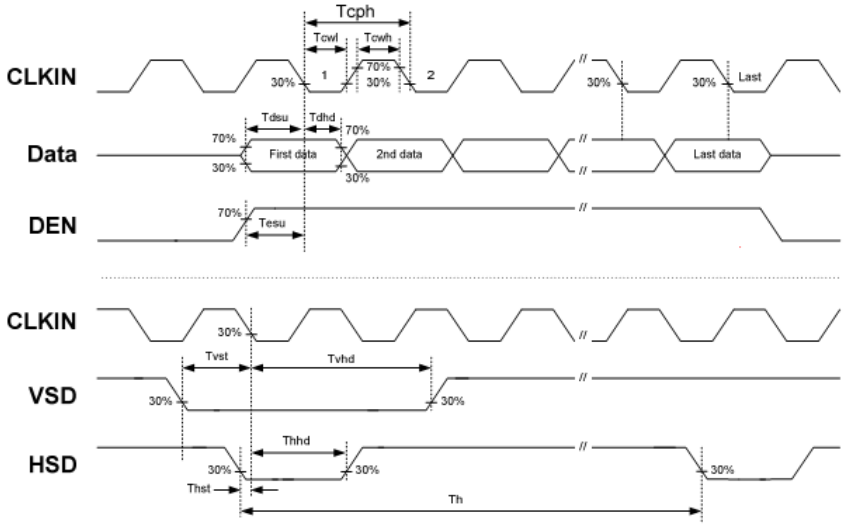
ITEM	SYMBOL	MIN	TYP.	MAX	UNIT
Power Supply	VDD	3.0	3.3	3.6	V
	AVDD	10.3	10.4	10.5	V
	VGH	15.3	16	16.7	V
	VGL	-7.7	-7	-6.3	V
	VCOM	4.2	4.4	4.6	V
Input Voltage	Vil	0	-	0.3VDD	V
	Vih	0.7VDD	-	VDD	V

8. TIMING CHARACTERISTICS

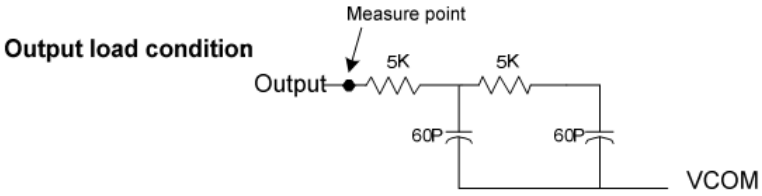
8.1 PARALLEL RGB MODE TIMING DIAGRAM

Timing Diagram

Input Clock and Data Timing Diagram



Source Output



Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLKIN Frequency	Fclk	-	33.3	50	MHz	VDD = 3.0V ~3.6V
CLKIN Cycle Time	Tclk	20	30	-	ns	
CLKIN Pulse Duty	Tcwh	40	50	60	%	Tclk=Tcwh+cwl
	Tcwl	40	50	60	%	
VSD to STV	Tstv	-	24	-	H	HV mode
DEN to STV	Tstv		4		CLKIN	DE mode
STV pulse width	Twstv	-	0.5	-	H	
STV to CKV	Tckv	-	18	-	CLKIN	
STV to OEV	Toev	-	2	-	CLKIN	
CKV Pulse Width	Twckv	-	66	-	CLKIN	
OEV Pulse Width	Twoev	-	50	-	CLKIN	

9. RELIABILITY TEST

NO.	TEST ITEM	CONDITIONS
1	HIGH TEMPERATURE STORAGE	TA=80℃ 240H
2	LOW TEMPERATURE STORAGE	TA=-30℃ 240H
3	HIGH TEMPERATURE OPERATION	TA=70℃ 240H
4	LOW TEMPERATURE OPERATION	TA=-20℃ 240H
5	HIGH TEMPERATURE AND HIGH HUMIDITY OPERATION	+60℃,90%RH 240H
6	THERMAL SHOCK	-30℃→+80℃, 0.5H;100CYCLES;1H/ CYCLES

10. LCD MODULES HANDLING PRECAUTIONS

- The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

- If the display panel is damaged and the liquid crystal substance inside it leaks out, do not get any in your mouth. If

- the substance come into contact with your skin or clothes promptly wash it off using soap and water.

- Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

- The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarize carefully.

- To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.
  -Be sure to ground the body when handling the LCD module.
  -Tools required for assembly, such as soldering irons, must be properly grounded.
  -To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.
  -The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated.

- Storage precautions
  When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps. Keep the modules in bags designed to prevent static electricity charging under low temperature / normal humidity conditions (avoid high temperature / high humidity and low temperatures below 0℃).Whenever possible, the LCD modules should be stored in the same conditions in which they were shipped from our company.

11. OTHERS

- Liquid crystals solidify at low temperature (below the storage temperature range) leading to defective orientation of liquid crystal or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subjected to a strong shock at a low temperature.

- If the LCD modules have been operating for a long time showing the same display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. Abnormal operating status can be resumed to be normal condition by suspending use for some time. It should be noted that this phenomena does not adversely affect performance reliability.

- To minimize the performance degradation of the LCD modules resulting from caused by static electricity, etc. exercise care to avoid holding the following sections when handling the modules:
  - Exposed area of the printed circuit board
  - Terminal electrode sections.