DISPLAY Elektronik GmbH

DATA SHEET

LCD MODULE

DEM 800480Z4 VMX-PW-N

Product Specification ***Version:4***

13.07.2022

GENERAL SPECIFICATION

MODULE NO. :

DEM 800480Z4 VMX-PW-N

CUSTOMER

VERSION NO.	CHANGE DESCRIPTION	DATE
0	Original Version	23.12.2020
1	Change the Temperature	08.01.2021
2	Change the Drawings	25.03.2021
3	Change the drawings and IC	11.07.2022
4	Update spec	13.07.2022

PREPARED BY: YK DATE: 13.07.2022

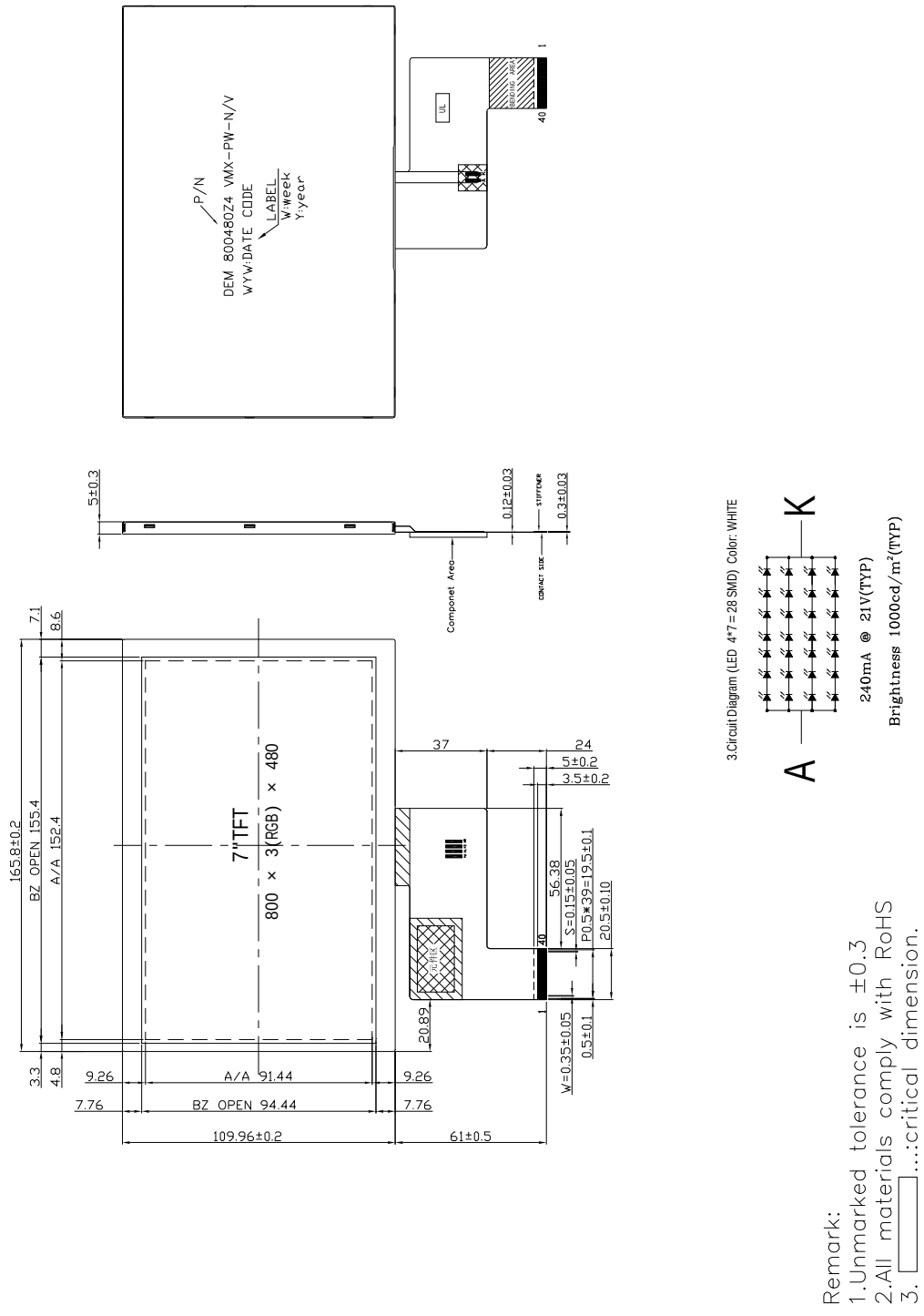
APPROVED BY: MHI DATE: 13.07.2022

CONTENTS

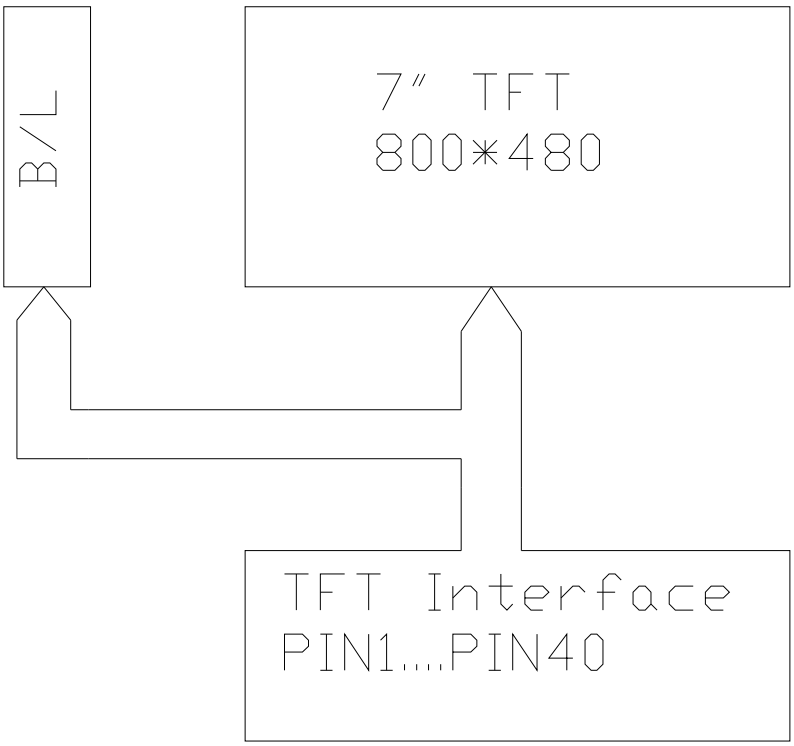
1. GENERAL SPECIFICATIONS

ITEM	STANDARD VALUE	UNIT
LCD TYPE	TFT/IPS/ NORMALLY BLACK/TRANSMISSIVE	
MODULE SIZE	165.80 x 109.96 x5.00	mm
ACTIVE AREA	152.40 x 91.44	mm
PIXEL PITCH (W*H)	0.1905 x 0.1905	
NUMBER OF PIXELS	800 x 480	
DRIVER IC	RM533C0+RM577C1	
INTERFACE TYPE	RGB	
RECOMMEND VIEWING DIRECTION	ALL	O’clock
GRAY SCALE INVERSION DIRECTION	-	O’clock
COLORS	16.7 MILLION	
BACKLIGHT TYPE	28-DIES WHITE LED	
TOUCH PANEL TYPE	WITHOUT	

2. EXTERNAL DIMENSIONS



3. BLOCK DIAGRAM



4. PIN ASSIGNMENT

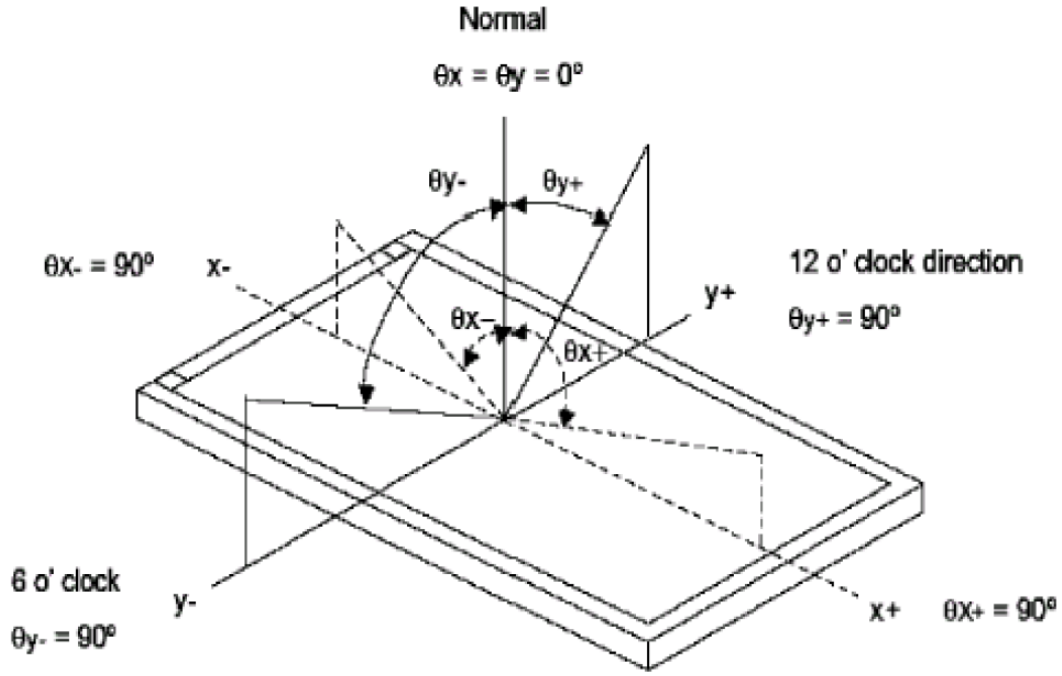
PIN NO.	SYMBOL	DESCRIPTION
1	K	LED Cathode
2	A	LED Anode
3	GND	Power ground
4	VDD	Power supply
5	R0 (D0[0])	Red data
6	R1 (D0[1])	Red data
7	R2 (D0[2])	Red data
8	R3 (D0[3])	Red data
9	R4 (D0[4])	Red data
10	R5 (D0[5])	Red data
11	R6 (D0[6])	Red data
12	R7 (D0[7])	Red data
13	G0 (D1[0])	Green data
14	G1 (D1[1])	Green data
15	G2 (D1[2])	Green data
16	G3 (D1[3])	Green data
17	G4 (D1[4])	Green data
18	G5 (D1[5])	Green data
19	G6 (D1[6])	Green data
20	G7 (D1[7])	Green data
21	B0 (D2[0])	Blue data
22	B1 (D2[1])	Blue data
23	B2 (D2[2])	Blue data
24	B3 (D2[3])	Blue data
25	B4 (D2[4])	Blue data
26	B5 (D2[5])	Blue data
27	B6 (D2[6])	Blue data
28	B7 (D2[7])	Blue data
29	GND	Power ground
30	CLK	Clock signal
31	STBYB	Standby mode, normally pulled high. STBYB = “1”, normal operation STBYB = “0”, timing controller, source driver will turn off, all output are High-Z

32	HS	Horizontal sync signal; negative polarity
33	VS	Vertical sync signal; negative polarity
34	DEN	Data input enable
35	NC	Not connection
36	GND	Power ground
37	NC	Not connection
38	NC	Not connection
39	NC	Not connection
40	NC	Not connection

5. OPTICAL CHARACTERISTICS

ITEM		SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
				MIN	TYP.	MAX		
Luminance		L		800	1000	-	cd/㎡	
Contrast ratio		CR	θ =0 °	800	1000			
Response time	Rising	TR	25℃ θ =0 °		25	30	ms	
	Falling	TF						
CIE COLOUR COORDINATE	RED	XR	CR≥10	0.644	0.664	0.684		
		YR		0.301	0.321	0.341		
	GREEN	XG		0.27	0.29	0.31		
		YG		0.531	0.551	0.571		
	BLUE	XB		0.114	0.134	0.154		
		YB		0.095	0.115	0.135		
	WHITE	XW		0.271	0.291	0.311		
		YW		0.306	0.326	0.346		
VIEWING ANGLE	Hor.	θ x+	CR≥10	75	80		Degree	
		θ x-		75	80			
	Ver.	θ y+		75	80			
		θ y-		75	80			
Uniformity	Un			80			%	

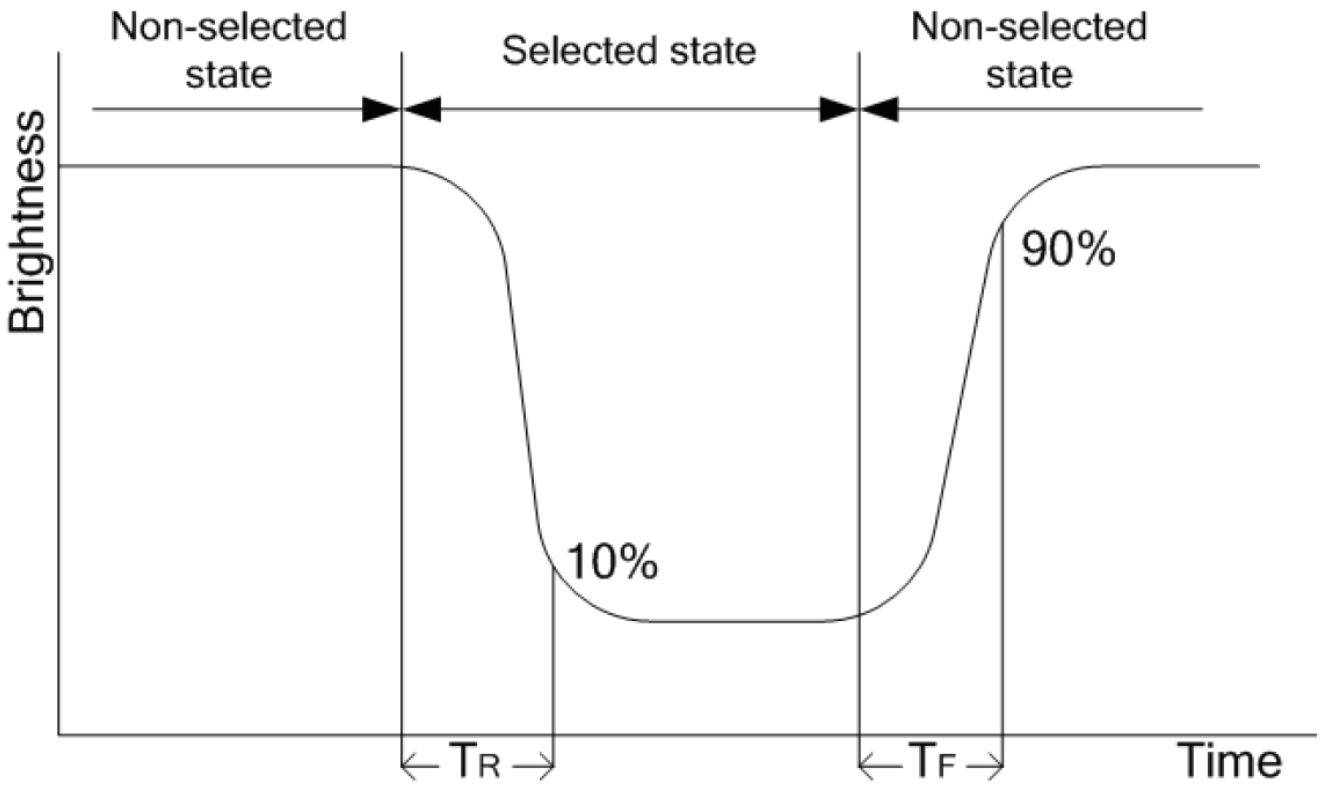
Note 1 : Definition of Viewing Angle θ_x and θ_y :



Note 2: Definition of contrast ratio CR:

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

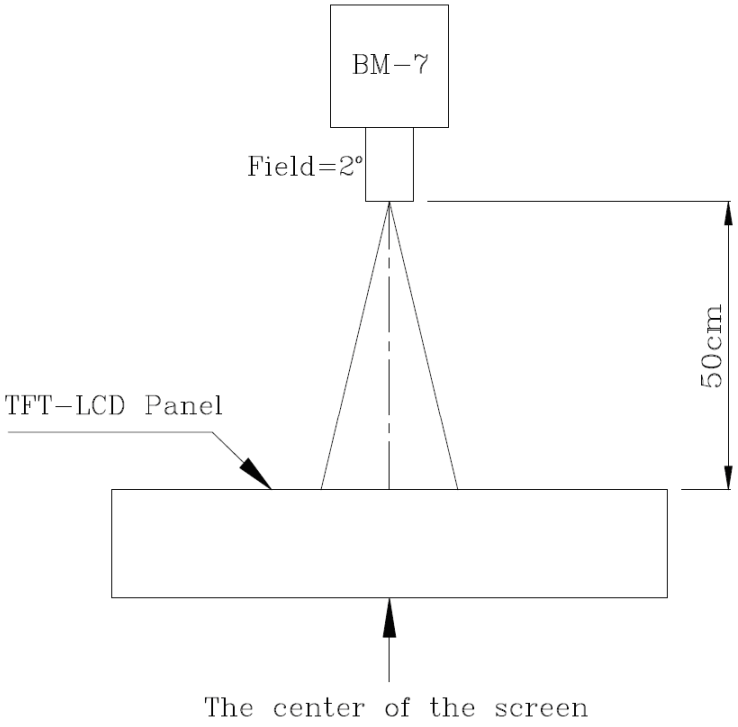
Note 3: Definition of response time (T_R, T_F)



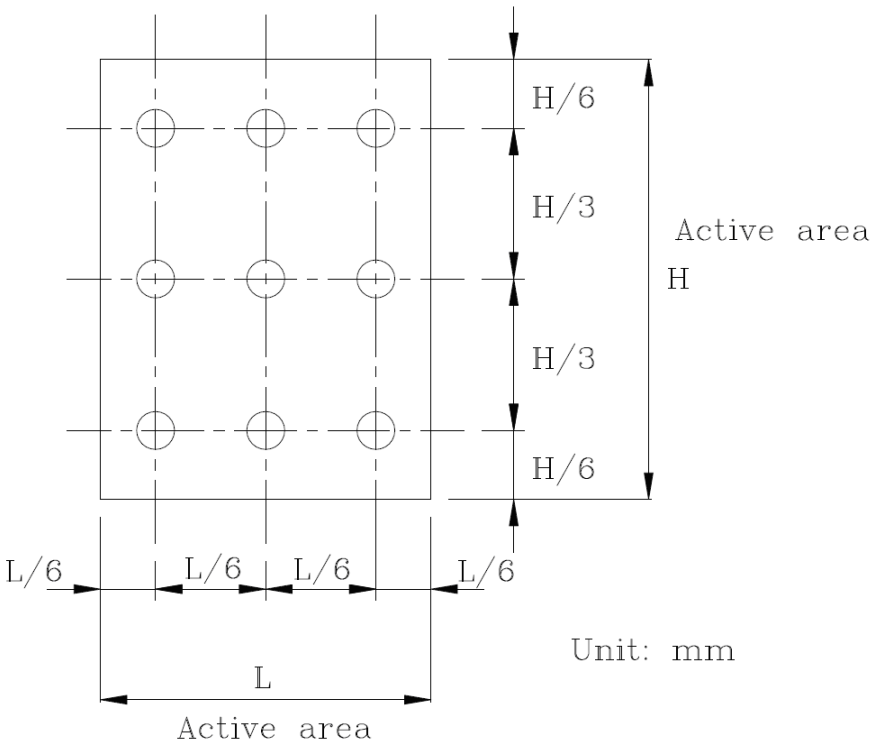
Note 4: Definition of Luminance

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	6.0	V
Operating temperature	Top	-30	+85	℃
Storage temperature	Tst	-30	+85	℃

7. ELECTRICAL CHARACTERISTICS

7.1 BLACKLIGHT DRIVING CONDITIONS

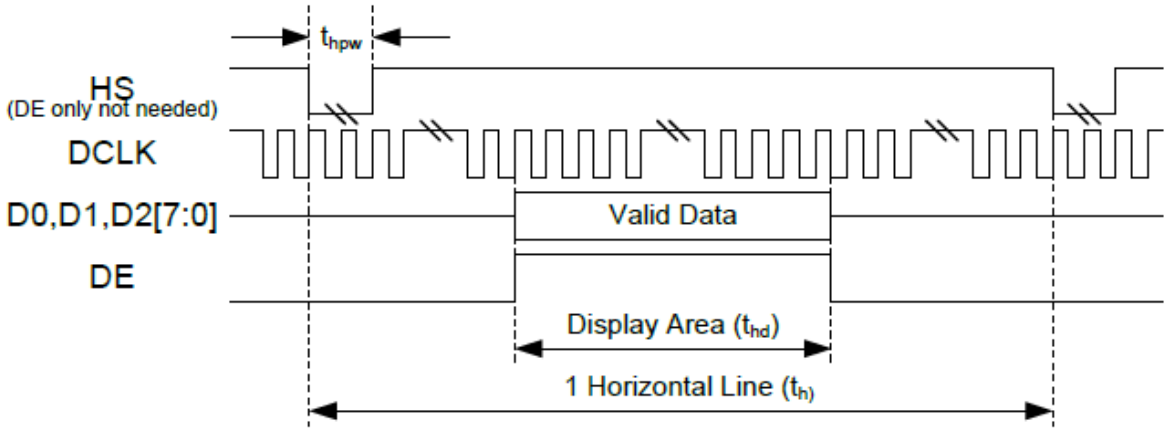
ITEM	SYMBOL	SPECIFICATIONS			UNIT	REMARK
		MIN	TYP.	MAX		
Supply Voltage	Vf		21		V	
Supply Current	IL		240		mA	
Power consumption	P		5.04		W	
LED lifetime			50,000		H_r	

7.2 ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	MIN	TYP.	MAX	UNIT
Power Supply	VDD	3.2	3.3	3.4	V
Input voltage	Vil	VSS	-	0.3VDD	V
	Vih	0.7VDD	-	VDD	V

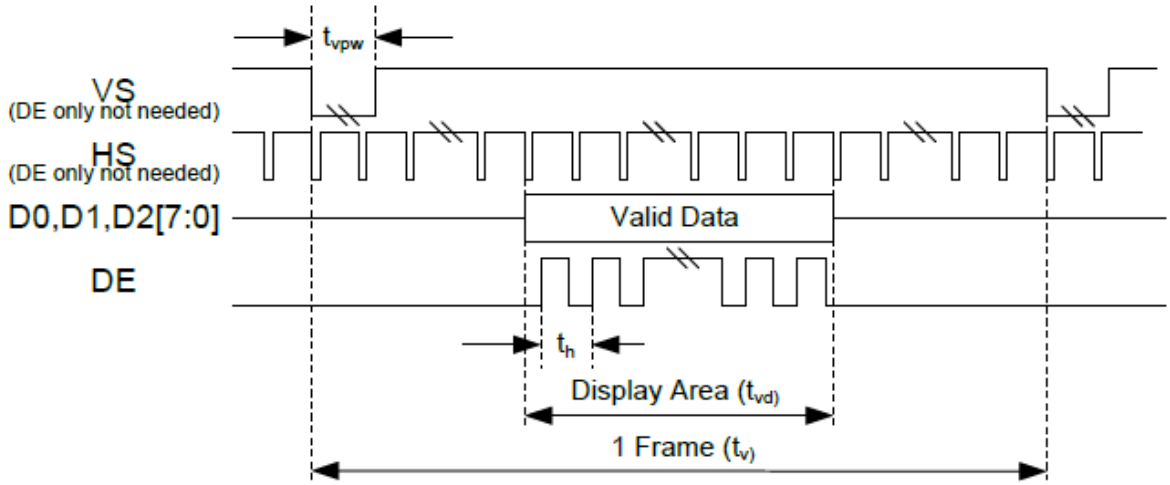
8. TIMING CHARACTERISTICS

◆ Horizontal



Horizontal input timing at DE only mode

◆ Vertical



Vertical input timing at DE only mode

Parameter	Symbol	800×RGB×480 (RES[3:0]=0x6h)			Unit
		Min.	Typ.	Max.	
DCLK Frequency	F_{DCLK}	25.2	27.2	30.5	MHz
Horizontal valid data	t_{hd}		800		DCLK
1 Horizontal Line	t_h	856	860	920	DCLK
Vertical valid data	t_{vd}		480		H
1 Vertical field	t_v	490	528	552	H
Frame rate	FR				Hz

9. RELIABILITY TEST

NO.	TEST ITEM	CONDITIONS
1	HIGH TEMPERATURE STORAGE	TA=85°C 240hrs
2	LOW TEMPERATURE STORAGE	TA=-30°C 240hrs
3	HIGH TEMPERATURE OPERATION	TA=85°C 240hrs
4	LOW TEMPERATURE OPERATION	TA=-30°C 240hrs
5	HIGH TEMPERATURE AND HIGH HUMIDITY OPERATION	TA=+60°C,90%RH 240hrs

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.