

NHD-4.3-480272EF-ATXL#-T

TFT (Thin-Film-Transistor) Color Liquid Crystal Display Module

NHD-	Newhaven Display
4.3-	4.3" Diagonal
480272-	480xRGBx272 pixels
EF-	Model
A-	Built-in driver / NO Controller
T-	White LED backlight
X-	TFT
L-	6:00 optimum view, Wide Temp
#-	RoHS Compliant
T-	4-wire Resistive touch panel

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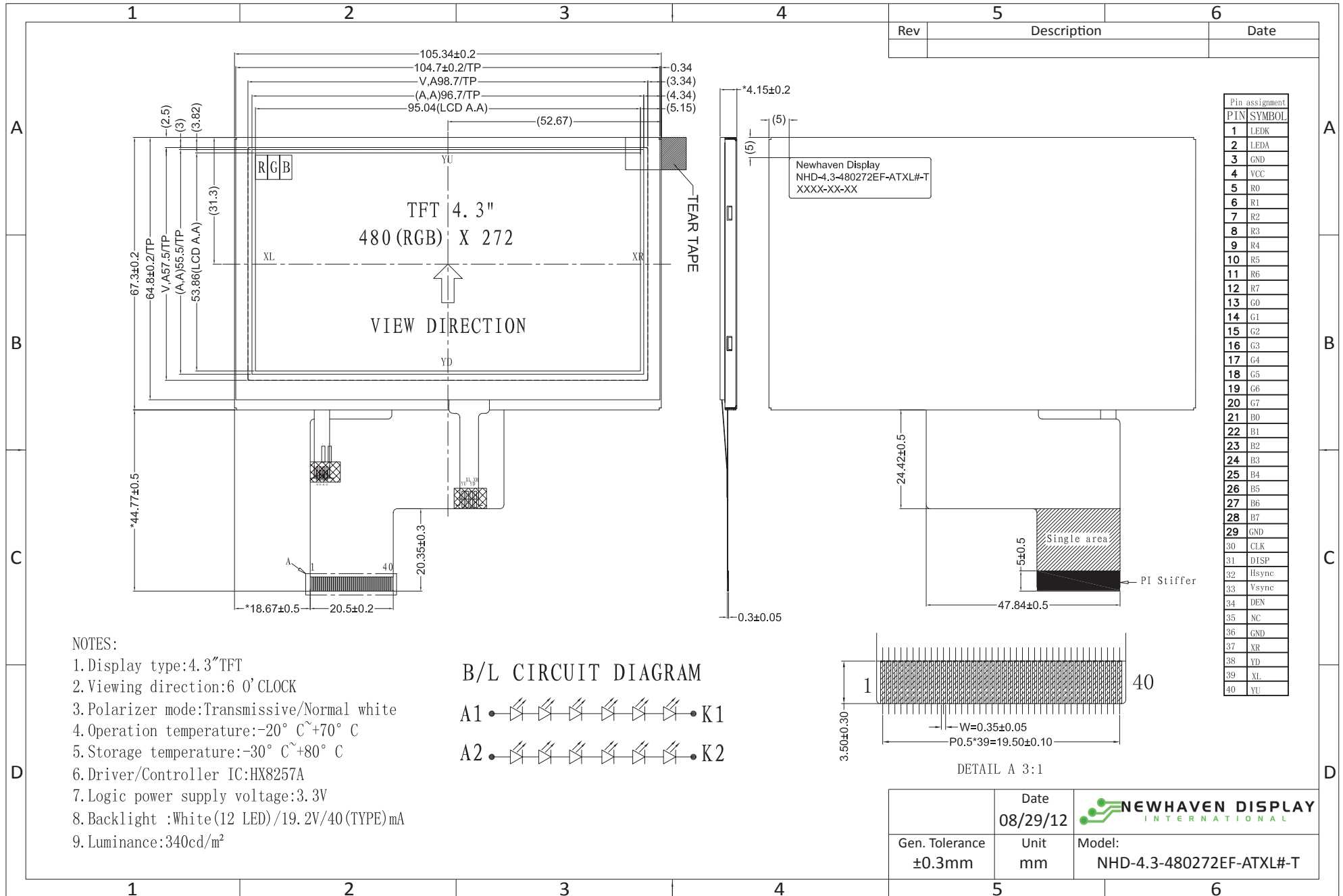
Document Revision History

Revision	Date	Description	Changed by
0	8/29/2012	Initial Release	AK

Functions and Features

- 480xRGBx272 resolution, up to 16.7M colors
- 12-LED backlight
- 24 bit RGB interface
- 4-wire Resistive touch panel

Mechanical Drawing



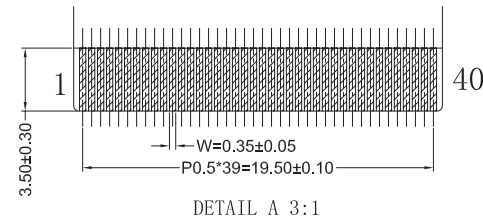
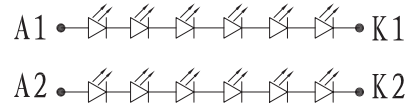
Rev	Description	Date

Pin assignment	
PIN	SYMBOL
1	LEDK
2	LEDA
3	GND
4	VCC
5	R0
6	R1
7	R2
8	R3
9	R4
10	R5
11	R6
12	R7
13	G0
14	G1
15	G2
16	G3
17	G4
18	G5
19	G6
20	G7
21	B0
22	B1
23	B2
24	B3
25	B4
26	B5
27	B6
28	B7
29	GND
30	CLK
31	DISP
32	Hsync
33	Vsync
34	DEN
35	NC
36	GND
37	XR
38	YD
39	XL
40	YU

NOTES:

1. Display type: 4.3" TFT
2. Viewing direction: 6 O' CLOCK
3. Polarizer mode: Transmissive/Normal white
4. Operation temperature: -20° C ~ +70° C
5. Storage temperature: -30° C ~ +80° C
6. Driver/Controller IC: HX8257A
7. Logic power supply voltage: 3.3V
8. Backlight : White (12 LED) / 19.2V/40 (TYPE) mA
9. Luminance: 340cd/m²

B/L CIRCUIT DIAGRAM



	Date 08/29/12	
Gen. Tolerance ±0.3mm	Unit mm	

Pin Description

Pin No.	Symbol	External Connection	Function Description
1	LED-	LED Power Supply	Ground for Backlight
2	LED+	LED Power Supply	Backlight Power Supply (32mA @ 19.2V)
3	GND	Power Supply	Ground
4	VDD	Power Supply	Power supply for LCD and logic (3.3V)
5-12	[R0-R7]	MPU	Red Data Signals
13-20	[G0-G7]	MPU	Green Data Signals
21-28	[B0-B7]	MPU	Blue Data Signals
29	GND	Power Supply	Ground
30	PCLK	MPU	Data sample Clock signal
31	DISP	MPU	Display ON/OFF signal
32	HSYNC	MPU	Line synchronization signal
33	VSYNC	MPU	Frame synchronization signal
34	DE	MPU	Data Enable signal
35	AVDD	-	No Connect
36	GND	Power Supply	Ground
37	XR	Touch Panel MPU	Touch Panel RIGHT
38	YD	Touch Panel MPU	Touch Panel DOWN
39	XL	Touch Panel MPU	Touch Pane LEFT
40	YU	Touch Panel MPU	Touch Panel UP

Recommended LCD connector: 0.5mm pitch 40-Conductor FFC. Molex p/n: 54132-4097

Backlight connector: on LCD connector **Mates with:** ---

Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	Top	Absolute Max	-20	-	+70	°C
Storage Temperature Range	Tst	Absolute Max	-30	-	+80	°C
Supply Voltage	VDD		3.0	3.3	3.6	V
Supply Current (White screen)	IDD		-	24.24	28.78	mA
Supply Current (Black screen)	IDD		-	25.76	30.30	mA
"H" level input	Vih		0.8*VDD	-	VDD	V
"L" level input	Vil		VSS	-	0.2*VDD	V
Backlight Supply Voltage	VLED		-	19.2	22	V
Backlight Supply Current	ILED		-	32	40	mA
Backlight Power Consumption	PBL		-	650	-	mW

Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle – Top		Cr ≥10	-	15	-	°
Viewing Angle – Bottom			-	35	-	°
Viewing Angle – Left			-	45	-	°
Viewing Angle – Right			-	45	-	°
Contrast Ratio	Cr		-	400	-	
Luminance	YL		340	-	480	cd/m ²
Response Time	Tr+Tf	-	-	20	45	ms

Touch Panel Characteristics

Item	Min.	Typ.	Max.	Unit
Linearity	-	-	1.5	%
Circuit Resistance – X-Axis	450	800	1300	Ω
Circuit Resistance – Y-Axis	100	350	800	Ω
Insulation Resistance	10	-	-	MΩ
Operating Voltage	-	-	5	V
Chattering	-	-	10	ms
Transmittance	82	-	-	%
Activation Force	50	-	200	g
Pen Writing Durability	100,000	-	-	Characters
Pitting Durability	1,000,000	-	-	Touches
Surface Hardness	3	-	-	H
Haze	-	7	-	%

Driver Information

Built-in Himax HX8257-A

Please download specification at http://www.newhavendisplay.com/app_notes/HX8257.pdf

Timing Characteristics

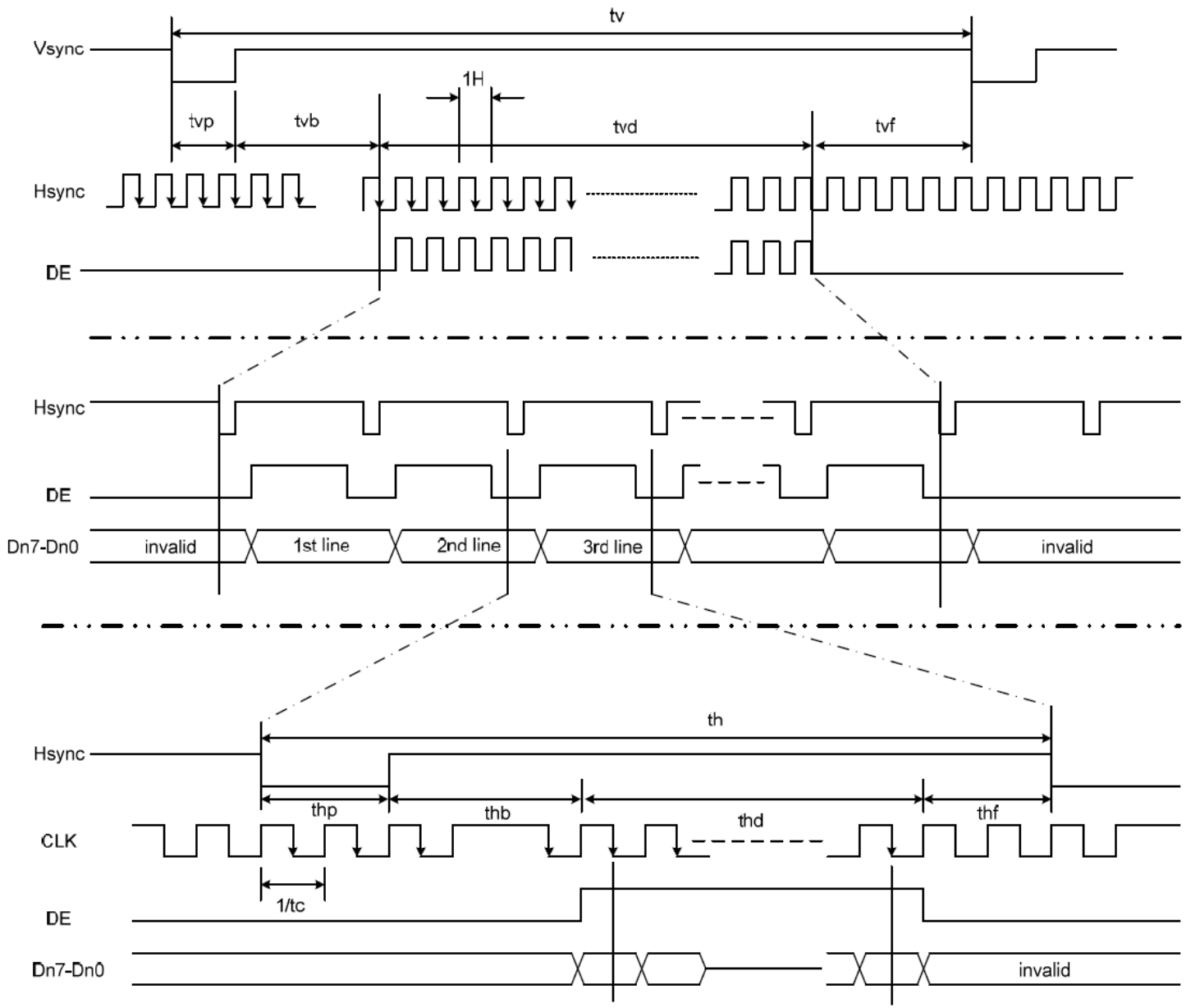
Parallel RGB input timing requirement

(480R GBx272, $T_A=25^\circ\text{C}$, $V_{DDIO}=1.8\text{V}$ to 3.6V , $DVSS=0\text{V}$)

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Clock cycle	$f_{\text{CLK}}^{(1)}$	-	9	15	MHz
Hsync cycle	$1/\text{th}$	-	17.14	-	KHz
Vsync cycle	$1/\text{tv}$	-	59.94	-	Hz
Horizontal Signal					
Horizontal cycle	th	525	525	605	CLK
Horizontal display period	thd	480	480	480	CLK
Horizontal front porch	thf	2	2	82	CLK
Horizontal pulse width	$\text{thp}^{(2)}$	2	41	41	CLK
Horizontal back porch	$\text{thb}^{(2)}$	2	2	41	CLK
Vertical Signal					
Vertical cycle	tv	285	286	511	$\text{H}^{(1)}$
Vertical display period	tvd	272	272	272	$\text{H}^{(1)}$
Vertical front porch	tvf	1	2	227	$\text{H}^{(1)}$
Vertical pulse width	$\text{tvp}^{(2)}$	1	10	11	$\text{H}^{(1)}$
Vertical back porch	$\text{tvb}^{(2)}$	1	2	11	$\text{H}^{(1)}$

Note: (1) Unit: $\text{CLK}=1/f_{\text{CLK}}$, $\text{H}=\text{th}$,

(2) It is necessary to keep $\text{tvp}+\text{tvb}=12$ and $\text{thp}+\text{thb}=43$ in sync mode. DE mode is unnecessary to keep it.



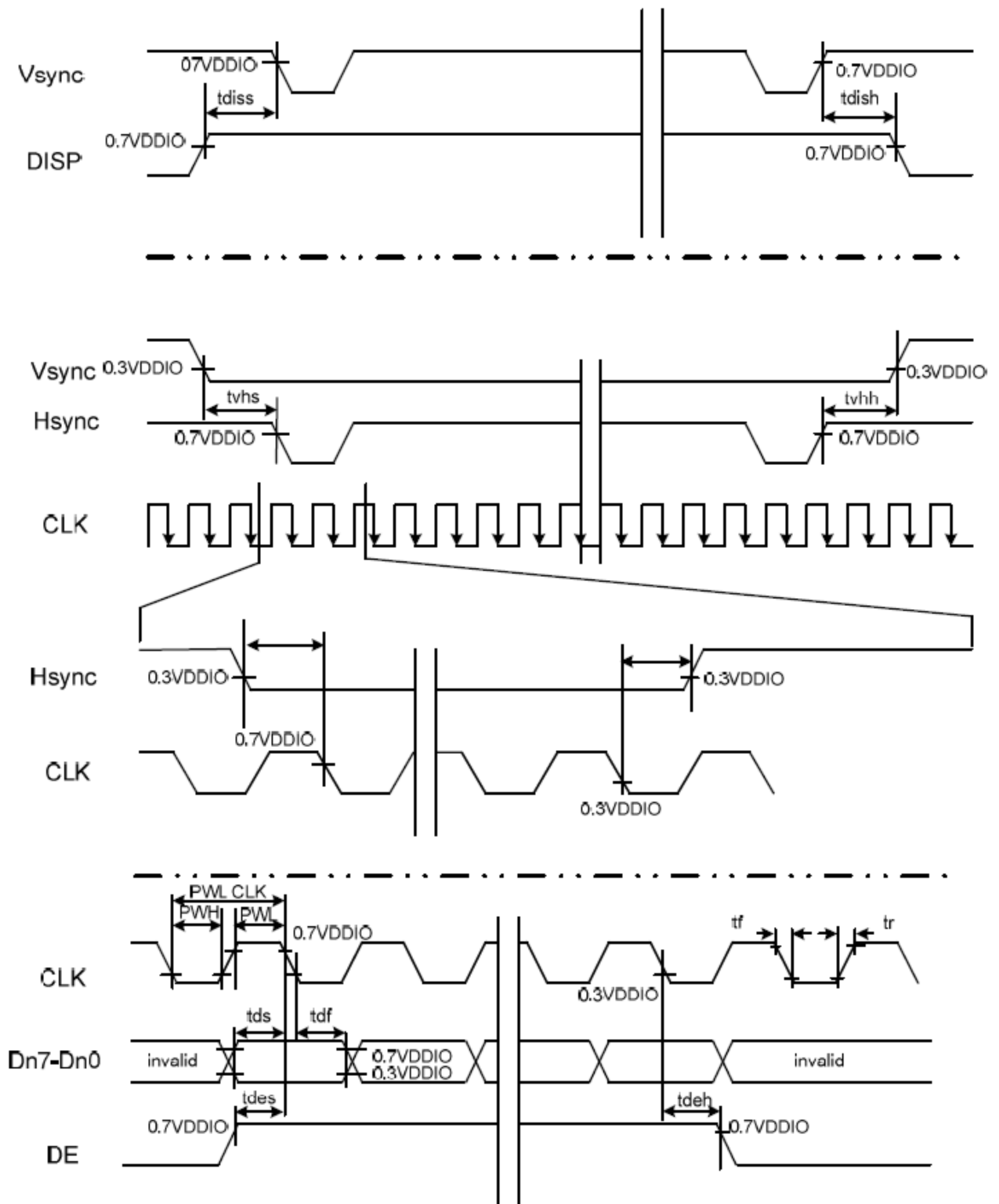
Input setup timing requirement

($T_A=25^\circ\text{C}$, $V_{DDIO}=1.8\text{V}$ to 3.6V , $DVSS = 0\text{V}$, $t_r^{(1)}=t_f^{(1)}=2\text{ns}$)

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DIS P setup time	t_{dis}	10	-	-	ns
DIS P hold time	$t_{dis h}$	10	-	-	ns
Clock period	$PW_{CLK}^{(2)}$	66.7	-	-	ns
Clock pulse high period	$PWH^{(2)}$	26.7	-	-	ns
Clock pulse low period	$PWL^{(2)}$	26.7	-	-	ns
Hsync setup time	t_{hs}	10	-	-	ns
Hsync hold time	t_{hh}	10	-	-	ns
Data setup time	t_{ds}	10	-	-	ns
Data hold time	t_{dh}	10	-	-	ns
DE setup time	t_{des}	10	-	-	ns
DE hold time	t_{deh}	10	-	-	ns
Vsync setup time	t_{vhs}	10	-	-	ns
Vsync hold time	t_{vhh}	10	-	-	ns

Note: (1) t_r , t_f is defined 10% to 90% of signal amplitude.

(2) For parallel interface, maximum clock frequency is 15MHz.



Quality Information

Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	+80°C , 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C , 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+70°C 200hrs	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C , 200hrs	1,2
High Temperature / Humidity Operation	Endurance test applying the electric stress (voltage & current) and the high thermal with high humidity stress for a long time.	+60°C , 90% RH , 96hrs	1,2
Thermal Shock resistance	Endurance test applying the electric stress (voltage & current) during a cycle of low and high thermal stress.	-20°C,30min -> 25°C,5min ->70°C,30min = 1 cycle 10 cycles	
Vibration test	Endurance test applying vibration to simulate transportation and use.	10-55Hz , 15mm amplitude. 60 sec in each of 3 directions X,Y,Z For 15 minutes	3
Static electricity test	Endurance test applying electric static discharge.	VS=800V, RS=1.5kΩ, CS=100pF One time	

Note 1: No condensation to be observed.

Note 2: Conducted after 4 hours of storage at 25°C, 0%RH.

Note 3: Test performed on product itself, not inside a container.

Precautions for using LCDs/LCMs

See Precautions at www.newhavendisplay.com/specs/precautions.pdf

Warranty Information and Terms & Conditions

http://www.newhavendisplay.com/index.php?main_page=terms