

NHD-1.8-128160ZF-CTXL#

TFT (Thin-Film Transistor) Liquid Crystal Display Module

NHD-	Newhaven Display
1.8-	1.8" diagonal
128160-	128 x 160 pixels (portrait mode)
ZF-	Model
C-	Built-in Controller
T-	White LED backlight
X-	Transmissive TFT
L-	Wide Temp, 12:00 view direction
#-	RoHS Compliant

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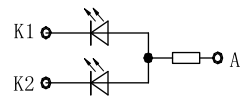
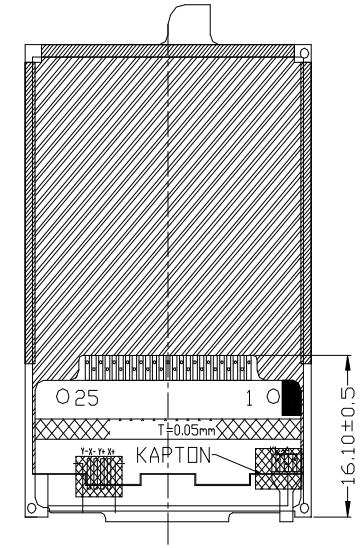
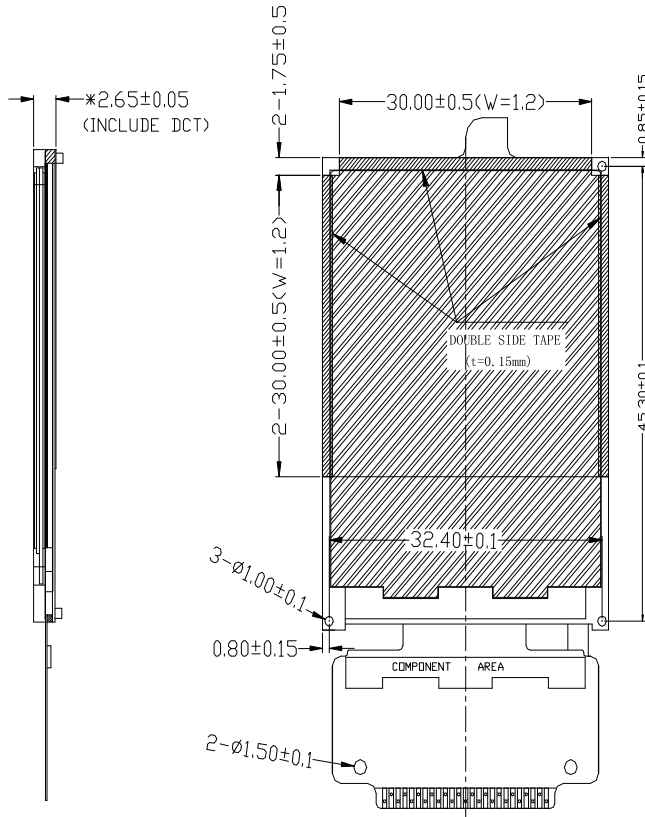
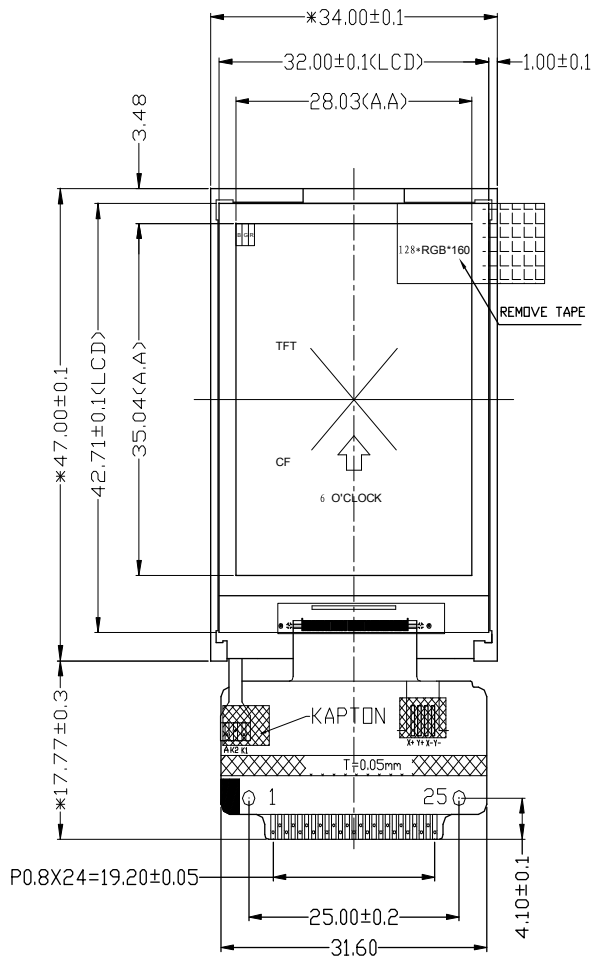
Document Revision History

Revision	Date	Description	Changed by
0	5/15/2008	Initial Release	
1	7/30/2009	User guide reformat	CL
2	8/26/2009	Viewing Angle Adjustment	MC
3	2/23/2011	Pin description updated	BE

Functions and Features

- 128 x 160 pixels (portrait mode)
- LED backlight
- 2.8V power supply
- 8-bit Parallel interface
- Built-in ILI9163 controller

Mechanical Drawing



BACKLIGHT LED CIRCUIT

No.	PIN NAME
1	GND
2	NC
3	NC
4	NC
5	NC
6	GND
7	VDD
8	/CS
9	RS
10	/WR
11	/RD
12	D0
13	D1
14	D2
15	D3
16	D4
17	D5
18	D6
19	D7
20	/RST
21	GND
22	LED1-
23	LED2-
24	NC
25	LED+

- NOTE:
- GENERAL TOLERANCE: ± 0.2 .
 - * CRITICAL DIMENSION
 - RoHS.

<h2>NEWHAVEN DISPLAY</h2>				DRAWING NO.	
				NHD-1.8-128160ZF-CTXL#	
UNIT	mm	SCALE	FIT		
3rd Angle				SHEET 1 OF 1	

Pin Description

Pin No.	Symbol	External Connection	Function Description
1	GND	Power Supply	Ground
2	NC	-	No Connect
3	NC	-	No Connect
4	NC	-	No Connect
5	NC	-	No Connect
6	GND	Power Supply	Ground
7	VDD	Power Supply	Power Supply for LCD and logic (2.8V)
8	/CS	MPU	Active LOW Chip Select signal
9	RS	MPU	Register Select: 0= write command, 1= write data
10	/WR	MPU	Active low Write signal
11	/RD	MPU	Active low Read signal
12	D0	MPU	Bi-directional data bus lines
13	D1	MPU	
14	D2	MPU	
15	D3	MPU	
16	D4	MPU	
17	D5	MPU	
18	D6	MPU	
19	D7	MPU	
20	/RST	MPU	Active LOW Reset signal
21	GND	Power Supply	Ground
22	LED1-	MPU/Switch	Backlight Cathode
23	LED2-	MPU/Switch	Backlight Cathode
24	NC	-	No Connect
25	LED+	Power Supply	Power Supply for Backlight

LCD connector: Hot-bar solder directly to PCB

Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	Top	Absolute Max	-20	25	+70	°C
Storage Temperature Range	Tst	Absolute Max	-30	25	+80	°C
Supply Voltage	VDD		-	2.8	-	V
Supply Current	IDD	VCC=2.8V		25.5		mA
"H" Level input	Vih		0.8VDD		VDD	V
"L" Level input	Vil		0		0.2VDD	V
"H" Level output	Voh		0.8VDD		VDD	V
"L" Level output	Vol		0		0.2VDD	V
Backlight Supply Voltage	Vled		3.0	3.2	3.4	V
Backlight Supply Current	Iled			30		mA
Brightness		Iled=30mA	100	120	180	cd/m2

Backlight circuit is 2 parallel LEDs, common Anode.

Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle –Top		Cr ≥ 10	-	15	-	°
Viewing Angle –Bottom		Cr ≥ 10	-	35	-	°
Viewing Angle – Left		Cr ≥ 10	-	45	-	°
Viewing Angle –Right		Cr ≥ 10	-	45	-	°
Contrast Ratio	Cr		150	250	-	-
Response Time (rise)	Tr		-	15	30	ms
Response Time (fall)	Tr		-	35	50	ms

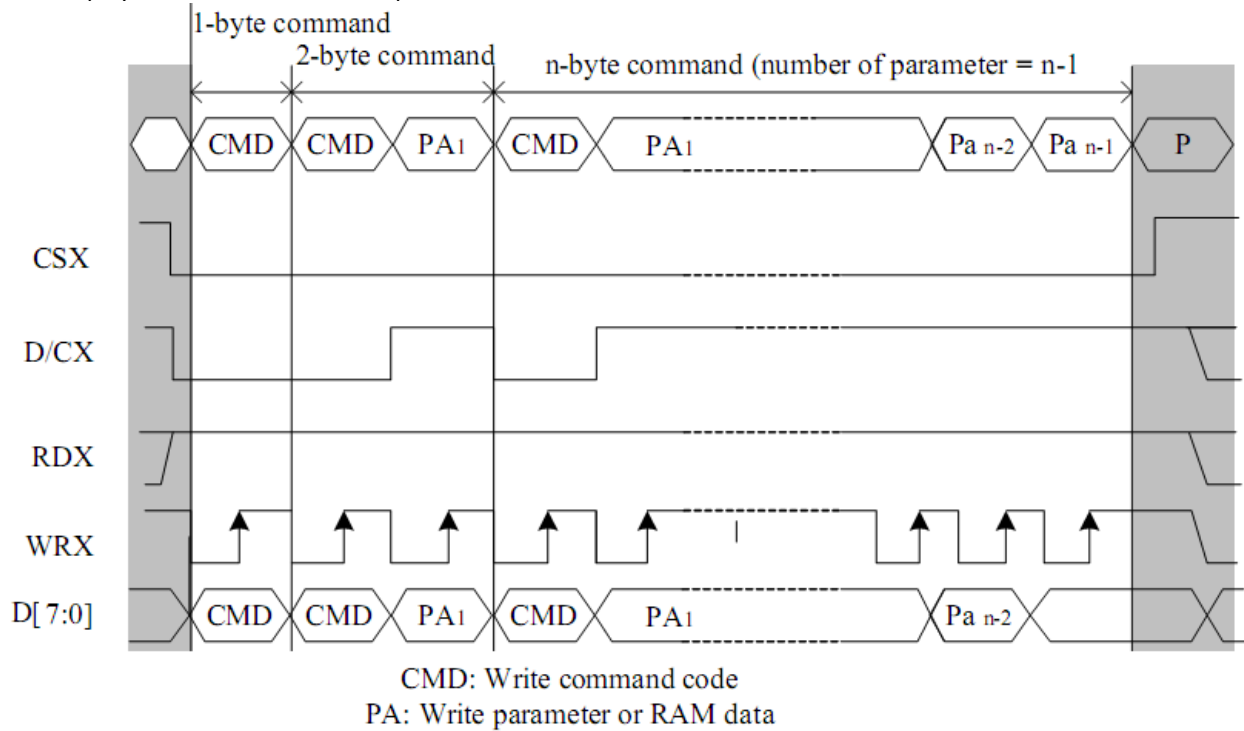
Driver Information

Built-in ILI9163 controller.

Download specification at http://www.newhavendisplay.com/app_notes/ILI9163.pdf

8080 MPU Parallel Interface:

The /CS signal (active LOW) enables and disables the controller. The LCD controller latches in data at the rising edge of /WR signal. When D/C is LOW, the data is latched in as commands. When D/C is HIGH, the data is latched in as display RAM data or command parameters.



Quality Information

Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	+70°C , 120hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C , 120hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+60°C , 72hrs	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C , 72hrs	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.	+50°C , 90% RH , 72hrs	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 -> 60°C,30min = 1 cycle 100 cycles	
Vibration test	Endurance test applying vibration to simulate transportation and use.	10-150Hz , 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=4KV, RS=330kΩ, CS=150pF Five times	

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

See Terms & Conditions at http://www.newhavendisplay.com/index.php?main_page=terms