

TFT COLOR LCD MODULE

NL8060BC31-28D

30.8cm (12.1 Type)

SVGA

LVDS interface (1port)

DATA SHEET

DOD-PD-0337 (1st edition)

**This DATA SHEET is updated document from
PRELIMINARY DATA SHEET DOD-PD-0127(1).**

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Please confirm the sales representative before
starting to design your system.**

INTRODUCTION

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1. OUTLINE

1.1 STRUCTURE AND PRINCIPLE

Color LCD module NL8060BC31-28D is composed of the amorphous silicon thin film transistor liquid crystal display (a-Si TFT LCD) panel structure with driver LSIs for driving the TFT (Thin Film Transistor) array and a backlight.

The a-Si TFT LCD panel structure is injected liquid crystal material into a narrow gap between the TFT array glass substrate and a color-filter glass substrate.

Color (Red, Green, Blue) data signals from a host system (e.g. PC, signal generator, etc.) are modulated into best form for active matrix system by a signal processing circuit, and sent to the driver LSIs which drive the individual TFT arrays.

The TFT array as an electro-optical switch regulates the amount of transmitted light from the backlight assembly, when it is controlled by data signals. Color images are created by regulating the amount of transmitted light through the TFT array of red, green and blue dots.

1.2 APPLICATION

- For industrial use

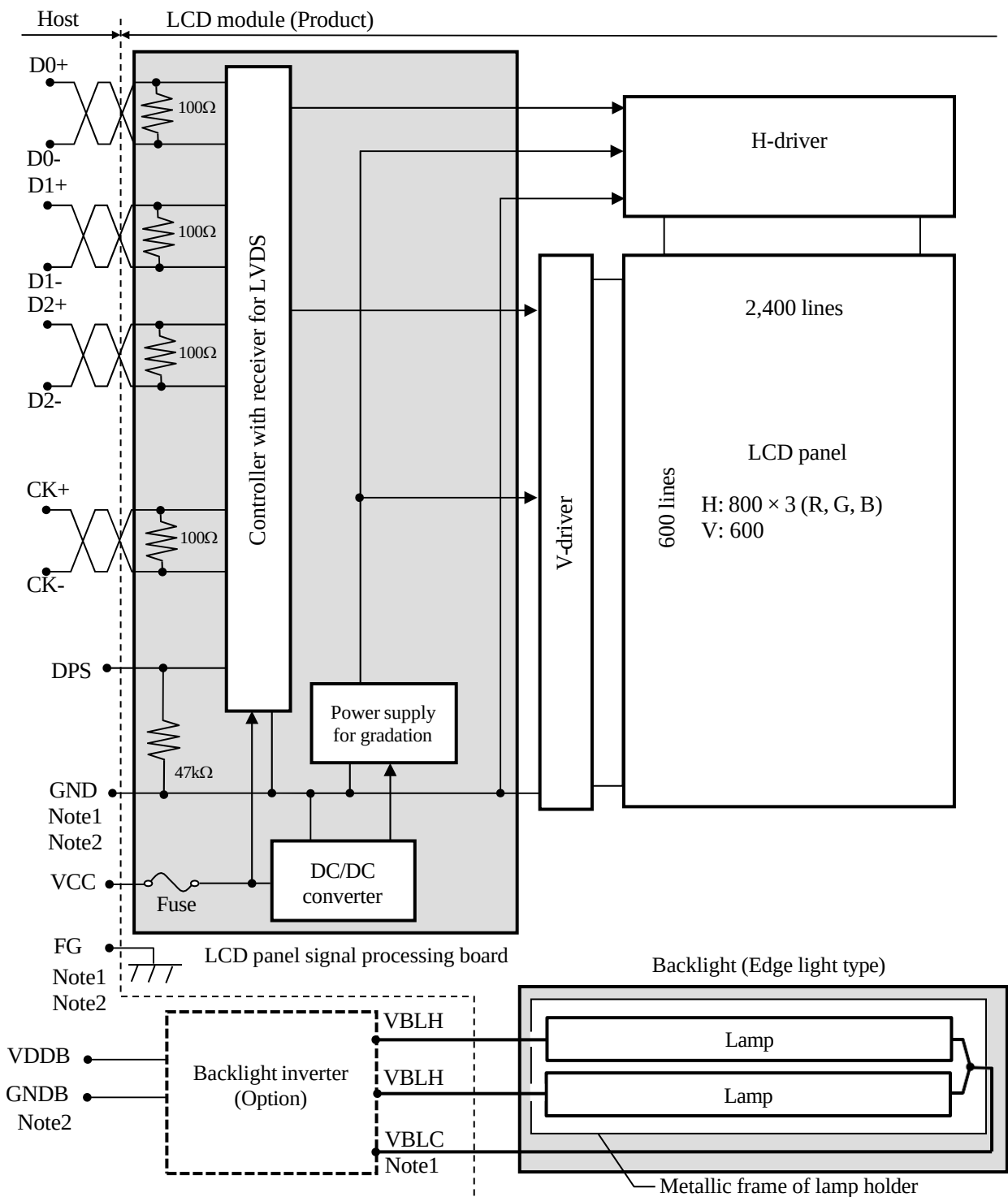
1.3 FEATURES

- High luminance
- High contrast
- Wide viewing angle
- Wide temperature range
- LVDS interface
- Reversible-scan direction
- Edge light type (without inverter)
- Replaceable lamp for backlight
- Acquisition product for UL60950-1 1st Edition/CSA C22.2 No.60950-1-03 (File number: E170632)

2. GENERAL SPECIFICATIONS

Display area	246.0 (H) × 184.5 (V) mm (typ.)
Diagonal size of display	30.8 cm (12.1 inches)
Drive system	a-Si TFT active matrix
Display color	262,144 colors
Pixel	800 (H) × 600 (V) pixels
Pixel arrangement	RGB (Red dot, Green dot, Blue dot) vertical stripe
Dot pitch	0.1025 (H) × 0.3075 (V) mm
Pixel pitch	0.3075 (H) × 0.3075 (V) mm
Module size	280.0 (W) × 210.0 (H) × 13.0 (D) mm (typ.)
Weight	730 g (typ.)
Contrast ratio	600:1 (typ.)
Viewing angle	At the contrast ratio $\geq 10:1$ • Horizontal: Right side 70° (typ.), Left side 70° (typ.) • Vertical: Up side 45° (typ.), Down side 55° (typ.)
Designed viewing direction	At DPS= Low or open: normal scan • Viewing direction without image reversal: up side (12 o'clock) • Viewing direction with contrast peak: down side (6 o'clock) • Viewing angle with optimum grayscale ($\gamma=2.2$): normal axis
Polarizer surface	Antiglare
Polarizer pencil-hardness	3H (min.) [by JIS K5400]
Color gamut	At LCD panel center 40 % (typ.) [against NTSC color space]
Response time	Ton+Toff (10% ← → 90%) 33 ms (typ.)
Luminance	At IBL= 5.0mArms / lamp 350 cd/m ² (typ.)
Signal system	LVDS 1port (Receiver: THC63LVDF84B, THine Electronics Inc. or equivalent) 6bit digital signals for data of RGB colors, Dot clock (CLK), Data enable (DE)
Power supply voltage	LCD panel signal processing board: 3.3V
Backlight	Edge light type: 2 cold cathode fluorescent lamps { Replaceable part • Lamp holder set: Type No. 121LHS18 { Recommended inverter (Option) • Inverter: Type No. 121PW181
Power consumption	At IBL=5.0mArms / lamp and checkered flag pattern 6.4 W (typ., Power dissipation of the inverter does not include.)

3. BLOCK DIAGRAM



Note1: Connections between GND (Signal ground), FG (Frame ground) and VBLC (Lamp low voltage terminal) in the LCD module

GND - FG	Not connected
GND - VBLC	Not connected
FG - VBLC	Not connected

Note2: GND, FG and GNDB must be connected to customer equipment's ground, and it is recommended that these grounds are connected together in customer equipment.

4. DETAILED SPECIFICATIONS

4.1 MECHANICAL SPECIFICATIONS

Parameter	Specification	Unit
Module size	280.0 ± 0.5 (W) × 210.0 ± 0.5 (H) × 13.0 (typ., D) 13.7 (max., D) Note1	mm
Display area	246.0 (H) × 184.5 (V) Note1	mm
Weight	730 (typ.), 760 (max.)	g

Note1: See "7. OUTLINE DRAWINGS".

4.2 ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Rating	Unit	Remarks	
Power supply voltage	LCD panel signal processing board	VCC	-0.3 to +4.0	V	Ta = 25℃	
	Lamp voltage	VBLH	1,800	Vrms		
Input voltage for signals	Display signals Note1	VD	-0.3 to VCC+0.3	V		
	Function signal Note2	VF				
Storage temperature		Tst	-20 to +80	℃	-	
Operating temperature		Front surface	TopF	-10 to +70	℃	Note3
		Rear surface	TopR	-10 to +70	℃	Note4
Relative humidity Note5		RH	≤ 95	%	Ta ≤ 40℃	
			≤ 85	%	40 < Ta ≤ 50℃	
Absolute humidity Note5		AH	≤ 70 Note6	g/m³	Ta > 50℃	

Note1: Display signals are D0+/-, D1+/-, D2+/- and CK+/-.

Note2: Function signal is DPS.

Note3: Measured at center of LCD panel surface (including self-heat)

Note4: Measured at center of LCD module's rear shield surface (including self-heat)

Note5: No condensation

Note6: Ta = 50°C, RH = 85%

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