

## AND064VT4N1-4HB

6.4" VGA

Color TFT LCD Module

The AND064VT4N1-4HB is a compact full color amorphous silicon TFT LCD module, that is suitable for applications such as computers, industrial, and test equipment, image communication and multi-media. This device consists of a twisted nematic (TN) liquid crystal cell, that incorporates a TFT-array that has 640 x 480 pixels on a 6.4 inch diagonal screen, X and Y drivers, an LSI controller, and a built-in CCFL backlight.

### Features

#### • RoHS Compliant

- High aperture ratio
- Sunlight readable
- High contrast ratio
- RoHS compliant
- Image Reversion: Up/Down & Left/Right
- Backlight lamps are replaceable
- Compatible w/VGA-480, VGA-400, VGA-350 & free format
- Single 5V input for LCD
- Dual CCFL backlight unit
- High image quality
- Active/outline area=62.3%

### Mechanical Characteristics

Item	Specification	Unit
Screen Size	6.4 inch (17 cm) diagonal	inch
Outline Dimensions	175.0 (H) x 126.5 (V) x 12.5 (D)	mm
Active Area	129.60 (H) x 97.44 (V)	mm
Input Signal	6-bit Digital	
Pixel No. (RGB trio)	640 (H) x 480 (V)	dot
Dot Pitch	0.0675 (H) x 0.203 (V)	mm
Pixel Configuration	Stripe	—
Pixel Pitch	0.203 (H) x 0.203 (V)	mm
Weight	340±10	g

### Absolute Maximum Rating

Item	Symbol	Conditions	Absolute Max. Rating		Unit
			Min.	Max.	
+5V Supply Voltage	V <sub>CC</sub>	Ta=25°C	-0.3	7.0	V
Input Signals Voltage	V <sub>sig</sub>	Ta=25°C	-0.3	V <sub>CC</sub> +0.3	V
Operating Temperature	Top	—	-20	+70	°C
Storage Temperature	Tstg	—	-30	+70	°C
Humidity (No condensation of water)	—	≤40°C	—	95%	RH

### Electrical Specification

Item	Symbol	Conditions	Specifications			Units
			Min.	Typ.	Max.	
Supply Voltage	V <sub>CC</sub>	Ta=25°C	4.75	5.0	5.25	V
Current Dissipation	I <sub>CC</sub>	Ta=25°C	—	500	600	mA
Supply Input Ripple Voltage	V <sub>CCRP</sub>	Ta=25°C	—	—	0.1	Vp-p
Input Signals Voltage (High)	V <sub>IH</sub>	Ta=25°C	2.6	—	—	V
Input Signals Voltage (Low)	V <sub>IL</sub>	Ta=25°C	—	—	0.5	V
Tube Current	I <sub>E</sub>	Ta=25°C	—	6	—	mA
Tube Voltage	V <sub>L</sub>	Ta=25°C	—	380	—	V <sub>RMS</sub>

Product specifications contained herein may be changed without prior notice.

It is therefore advisable to contact Purdy Electronics before proceeding with the design of equipment incorporating this product.

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**Power Consumption**

Parameters	Symbol	Specifications		Unit	Remark
		Typ.	Max.		
+5V Current Dissipation	I <sub>CC</sub>	100	120	mA	–
Input Signals Current (High)	I <sub>IH</sub>	–	100	μA	V <sub>IH</sub> =+5
Input Signals Current (Low)	I <sub>IL</sub>	–	100	μA	V <sub>IL</sub> =0V
LCD Panel Power Consumption	–	0.5	0.6	W	–
Backlight Power Consumption	–	4.32	–	W	380 V <sub>RMS</sub>

**Optical Specification**

Item		Symbol	Conditions	Specifications			Unit
				Min.	Typ.	Max.	
Luminance		LUM		750	800	850	cd/m <sup>2</sup>
Contrast Ratio		CR	At optimized Viewing angle	300	500	–	–
Viewing Angle	Horizontal	θ 21, θ 22	CR>10	±55	±60	–	deg
	Vertical	θ 12		35	40	–	
		θ 11		50	55	–	
Lamp Life	+25°C	Time		–	50,000	–	hr

**Interface Pin Assignment**
**CN1 Input Signal (DF9A-31P-1V)**

Pin No.	Symbol	Function
1	GND	Ground (0V)
2	CLK	Clock sig. for sampling image digital data
3	Hsync	Horizontal synchronous signal
4	Vsync	Vertical synchronous signal
5	GND	Ground (0V)
6	R0	Red Image data signal (LSB)
7	R1	Red Image data signal
8	R2	Red Image data signal
9	R3	Red Image data signal
10	R4	Red Image data signal
11	R5	Red Image data signal (MSB)
12	GND	Ground (0V)
13	G0	Green Image data signal (LSB)
14	G1	Green Image data signal
15	G2	Green Image data signal
16	G3	Green Image data signal

Pin No.	Symbol	Function
17	G4	Green Image data signal
18	G5	Green Image data signal (MSB)
19	GND	Ground (0V)
20	B0	Blue Image data signal (LSB)
21	B1	Blue Image data signal
22	B2	Blue Image data signal
23	B3	Blue Image data signal
24	B4	Blue Image data signal
25	B5	Blue Image data signal (MSB)
26	GND	Ground (0V)
27	DENB	Signal to select horiz. display position
28	VCC	DC +5.0V power supply
29	VCC	DC +5.0V power supply
30	R/L	Horiz. image shift-direction select signal
31	U/D	Vert. image shift-direction select signal

**CN2 & CN3 CCFL Power Supply**

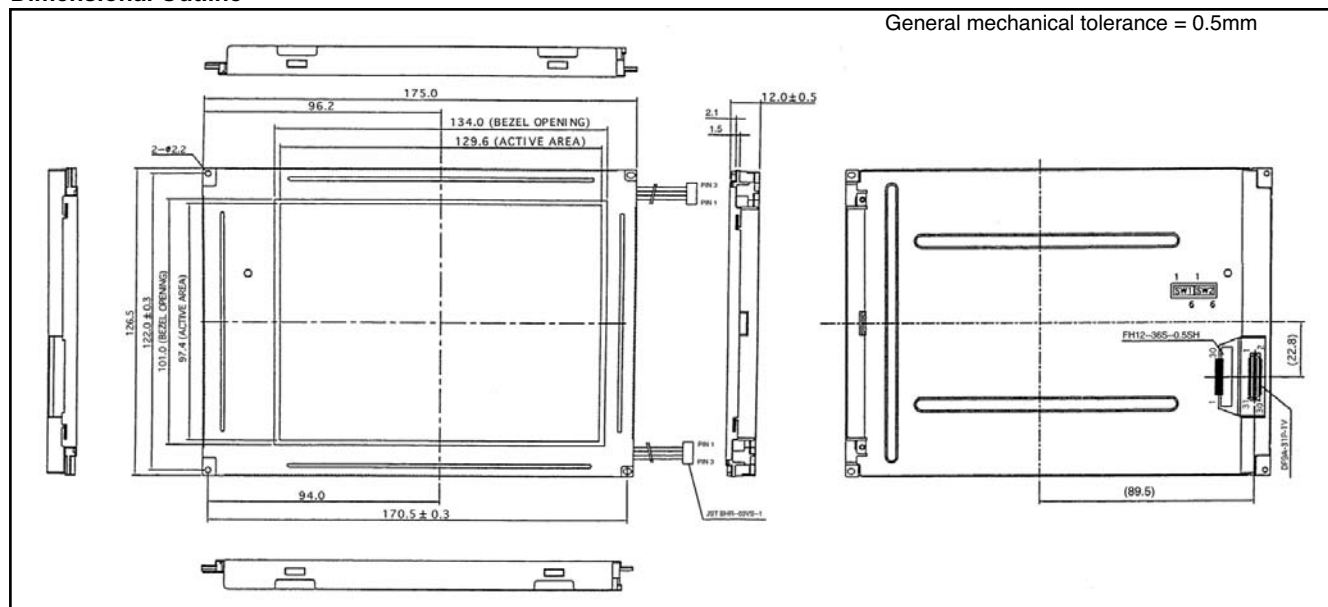
Pin No.	Symbol	Description
1	VL	Input (High Voltage)
2	NC	No Connect
3	GL	Input (Low Voltage)

Note: Use INV-CLIO-12-U-002

**Input/Output Connector**

(A) LCD module connector  
Hirose DF9A-31P-1V

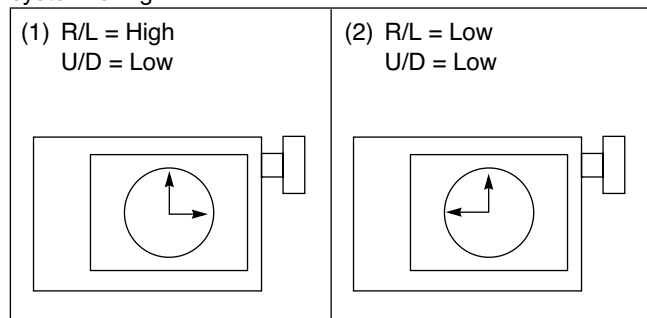
(B) Backlight connector  
JST BHR-03VS-1  
Pin No.: 3  
Pitch: 4 mm  
Red: High voltage  
White: Low voltage

**Dimensional Outline**


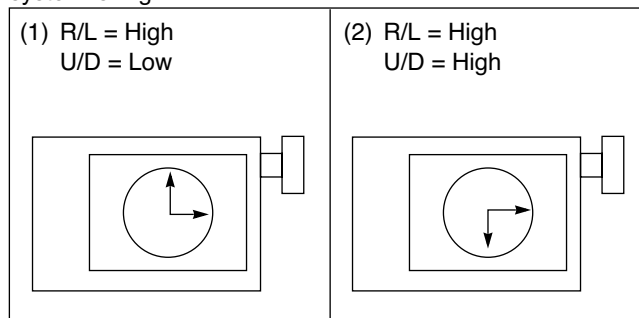
Note: The TFT-LCD module is compatible with four kinds of VGA timing. They are VGA-480, VGA-400, VGA-350 and freedom mode. The polarization of Hsync and Vsync determine the timing.

	VGA-480	VGA-400	VGA-350	Freedom Mode
<b>Hsync Polarization</b>	Negative	Negative	Positive	Positive
<b>Vsync Polarization</b>	Negative	Positive	Negative	Positive

R/L is the Right/Left shift signal. The default value of the system is High.



U/D is the Up/Down shift signal. The default value of the system is High.


**Input/Output Signal Timing Chart**

Parameters	Symbol	Format	Min	Typ	Max	Unit
Clock	Frequency	$F_c = 1/T_c$	—	25.175	—	MHz
	High Time	Tckh	10	—	—	ns
	Low Time	Tckl	10	—	—	ns

Parameters		Symbol	Format	Min	Typ	Max	Unit
Hsync	Period	Hp	All	—	31.778	—	μs
				—	800	—	tc
	Pulse Width	Hpw	All	12	96	139	tc
	Back Porch	Hbp	All	12	48	139	tc
	Hpw+Hbp		All	136	144	151	tc
Vsync	Period	Vp	VGA-480	—	16.8	—	ms
				515	525	800	Hp
			VGA-400	—	14.3	—	ms
				446	449	480	Hp
			VGA-350	—	14.3	—	ms
				447	449	510	Hp
	Pulse Width	Vpw	All	2	2	35	Hp
	Back Porch	Vbp	480	2	33	35	Hp
			400	2	35	38	
			350	2	60	63	
Data	CLK-DATA	Dcd	All	10	—	—	ns
	DATA-CLK	Ddc	All	10	—	—	ns
DENB	Horizontal Scanning Period	T1	All	780	800	900	tc
	Horizontal Scanning Period	T2	All	—	640	—	tc
	Vertical Display Period	T3	All	—	480	—	T1
	Frame Cycling Period	T4	All	515	525	800	T1

**AND064VT5N1-WV HB Block Diagram**
