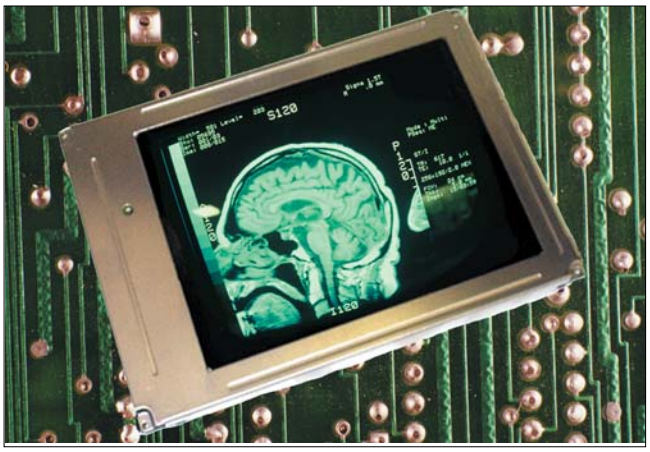
AND Displays



AND064VT4N1-HB-KIT

6.4” VGA
Color TFT LCD Module

The AND064VT4N1-HB-KIT 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

- High aperture ratio
- High brightness
- High contrast ratio
- Pixel in stripe configuration
- 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
- Thin and light weight
- 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 Configurationt	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 SupplyVoltage	V_{CC}	Ta-25°C	-0.3	7.0	V
Input Signals Voltage	Vsig	Ta-25°C	-0.3	V_{CC}+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_{CC}	Ta=25°C	4.75	5.0	5.25	V
Current Dissipation	I_{CC}	Ta=25°C	–	500	600	mA
Supply Input Ripple Voltage	V_{CCRP}	Ta=25°C	–	–	0.1	Vp-p
Input Signals Voltage (High)	V_{IH}	Ta=25°C	2.6	–	–	V
Input Signals Voltage (Low)	V_{IL}	Ta=25°C	–	–	0.5	V
Tube Current	I_E	Ta=25°C	–	6	–	mA
Tube Voltage	V_L	Ta=25°C	–	380	–	V_{RMS}

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.

Power Consumption

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

Optical Specification

Item		Symbol	Conditions	Specifications			Unit
				Min.	Typ.	Max.	
Luminance		LUM		350	400	–	cd/m^2
Contrast Ratio		CR	At optimized Viewing angle	200	400	–	–
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		–	20,000	–	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)

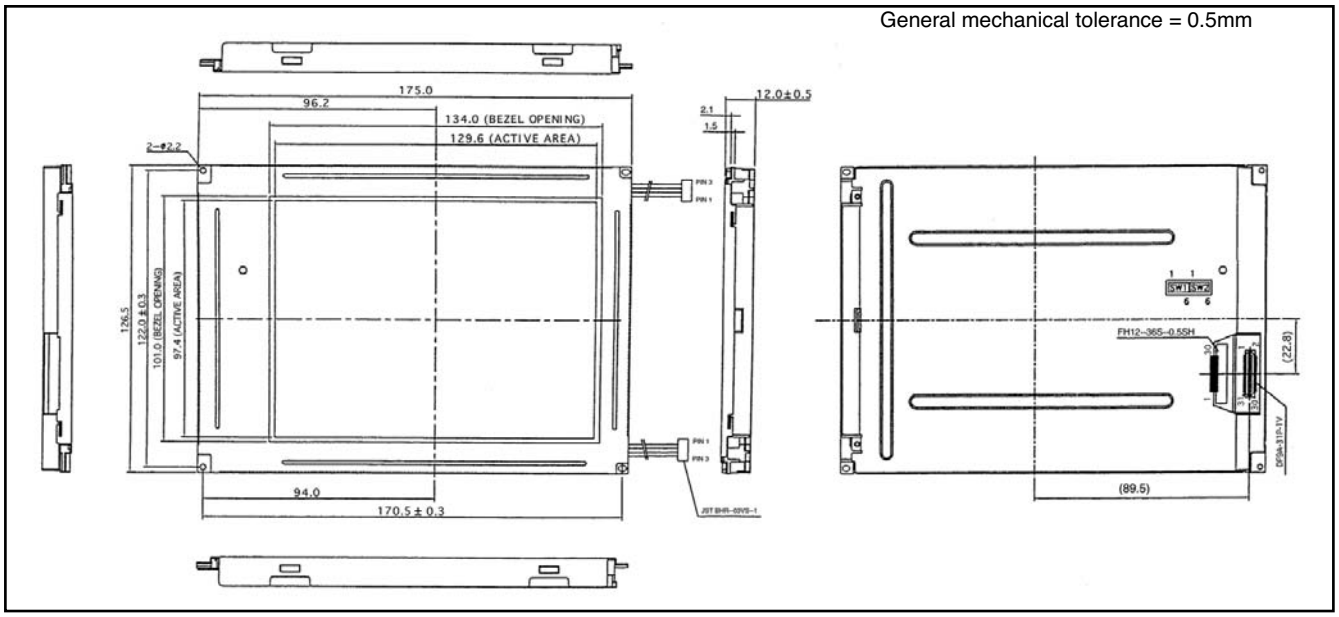
Note: Low voltage side of backlight inverter connects with ground of inverter circuits.

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

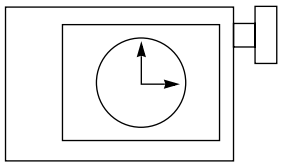


Note: The TFT-LCD module is compatible with four kinds of VGA timing. They are VGA-480, VGA-400, VGA-350 and freedom mode. The polarization of Hsync and Vsync determine the timing.

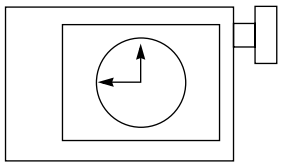
	VGA-480	VGA-400	VGA-350	Freedom Mode
Hsync Polarization	Negative	Negative	Positive	Positive
Vsync Polarization	Negative	Positive	Negative	Positive

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

(1) R/L = High
U/D = Low

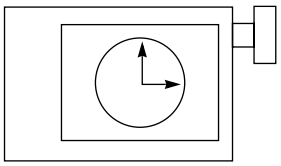


(2) R/L = Low
U/D = Low

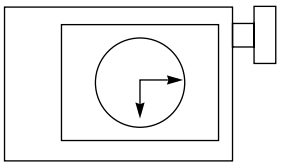


U/D is the Up/Down shift signal. The default value of the system is High.

(1) R/L = High
U/D = Low



(2) R/L = High
U/D = High



Input/Output Signal Timing Chart

Parameters		Symbol	Format	Min	Typ	Max	Unit
Clock	Frequency	Fc=1/Tc	All	–	25.175	–	MHz
	High Time	Tckh	All	10	–	–	ns
	Low Time	Tckl	All	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