

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

- 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

• RoHS Compliant

- 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_{CC} | $T_a=25^{\circ}C$ | -0.3 | 7.0 | V |
| Input Signals Voltage | V_{sig} | $T_a=25^{\circ}C$ | -0.3 | $V_{CC}+0.3$ | V |
| Operating Temperature | T_{op} | - | -20 | +70 | $^{\circ}C$ |
| Storage Temperature | T_{stg} | - | -30 | +70 | $^{\circ}C$ |
| Humidity (No condensation of water) | - | $\leq 40^{\circ}C$ | - | 95% | RH |

Electrical Specification

| Item | Symbol | Conditions | Specifications | | | Units |
|------------------------------|------------|-------------------|----------------|------|------|-----------|
| | | | Min. | Typ. | Max. | |
| Supply Voltage | V_{CC} | $T_a=25^{\circ}C$ | 4.75 | 5.0 | 5.25 | V |
| Current Dissipation | I_{CC} | $T_a=25^{\circ}C$ | - | 500 | 600 | mA |
| Supply Input Ripple Voltage | V_{CCRP} | $T_a=25^{\circ}C$ | - | - | 0.1 | Vp-p |
| Input Signals Voltage (High) | V_{IH} | $T_a=25^{\circ}C$ | 2.6 | - | - | V |
| Input Signals Voltage (Low) | V_{IL} | $T_a=25^{\circ}C$ | - | - | 0.5 | V |
| Tube Current | I_E | $T_a=25^{\circ}C$ | - | 6 | - | mA |
| Tube Voltage | V_L | $T_a=25^{\circ}C$ | - | 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.

Purdy Electronics Corporation • 720 Palomar Avenue • Sunnyvale, CA 94085

Tel: 408.523.8200 • Fax: 408.733.1287 • sales@purdyelectronics.com

www.purdyelectronics.com

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 | – | W | 380 V _{RMS} |

Optical Specification

| Item | Symbol | Conditions | Specifications | | | Unit | |
|----------------|------------|----------------------------|----------------|--------|------|-------------------|-----|
| | | | Min. | Typ. | Max. | | |
| Luminance | LUM | | 750 | 800 | 850 | cd/m ² | |
| 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

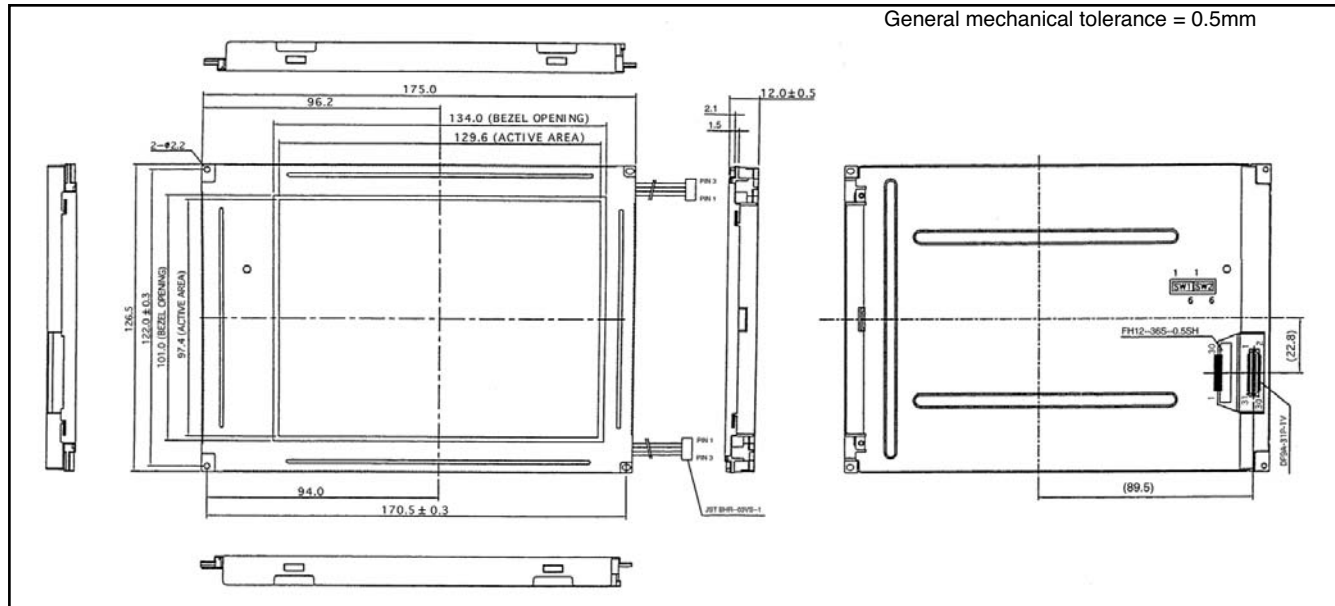
| Pin No. | Symbol | Description |
|---------|--------|----------------------|
| 1 | VL | Input (High Voltage) |
| 2 | NC | No Connect |
| 3 | GL | Input (Low Voltage) |

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

Input/Output Connector

- | | |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <p>(A) LCD module connector Hirose DF9A-31P-1V</p> | <p>(B) Backlight connector JST BHR-03VS-1 Pin No.: 3 Pitch: 4 mm Red: High voltage White: Low voltage</p> |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|

Dimensional Outline

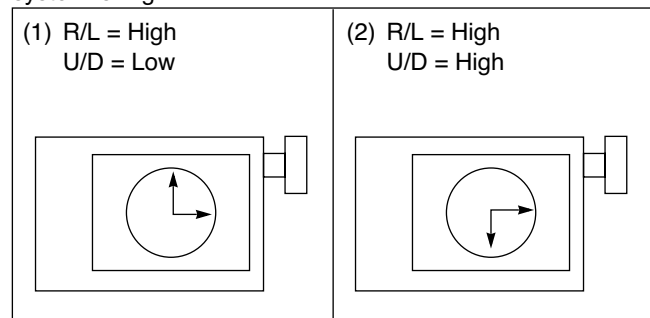
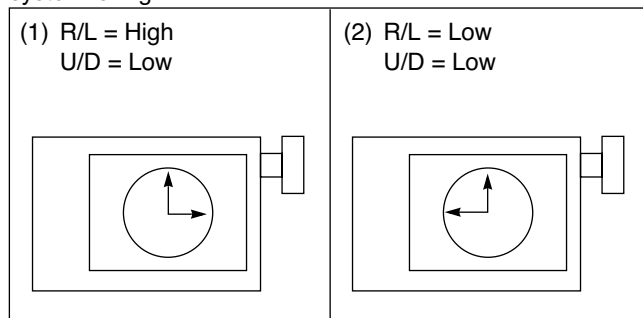


Note: The TFT-LCD module is compatible with four kinds of VGA timing. They are VGA-480, VGA-400, VGA-350 and freedom mode. The polarization of Hsync and Vsync determine the timing.

| | 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.

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 | $F_c = 1/T_c$ | All | - | 25.175 | - | MHz |
| | High Time | T _{ckh} | All | 10 | - | - | ns |
| | Low Time | T _{ckl} | 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
