



LCDK197NTL0NCH01

LCDK197CTL1ARH01

Kits to Interface with LCD197 over HDMI and USB

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| Approvals | |
|--------------------|--|
| Model Number | LCDK197NTL0NCH01R1.0 LCDK197CTL1ARH01R1.0 |
| Datasheet Revision | 1.0 |
| Drawing Revision | A |

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Revision History

Document Revision

| Date | Version # | Description | Created By | Checked By | Approved By |
|------------|-----------|-----------------|------------|------------|-------------|
| 10/25/2022 | 1.0 | Initial Release | AJ | DA | JH |

Hardware Revision

| Date | Kit Number | Version # | Description |
|------------|------------------|-----------|--|
| 10/25/2022 | LCDK197NTL0NCH01 | 1.0 | LCDK197, no touch, no lens, no coating |
| 10/25/2022 | LCDK197CTL1ARH01 | 1.0 | LCDK197, capacitive touch, cover lens, anti-reflective coating |

Ordering Information

| LTS Part # | Parts in Kit | Description |
|----------------------|------------------------|----------------------------------|
| LCDK197NTL0NCH01R1.0 | PCB-L0090R1.1 | Carrier Board |
| | PCB-L0074R1.2 | HDMI to MIPI SODIMM |
| | LCD197-050NTL0NCNTR1.0 | 5" HBWG w/AR 1080 X 1920 |
| | CS-0502000 | 5V, 2A Power Supply |
| LCDK197CTL1ARH01R1.0 | PCB-L0090R1.1 | Carrier Board |
| | PCB-L0074R1.2 | HDMI to MIPI, I2C to USBC SODIMM |
| | LCD197-050CTL1ARNTR1.0 | 5" HBWG w/PCAP w/AR 1080 X 1920 |
| | CS-0502000 | 5V, 2A Power Supply |

Product Description

The LCDK197 kits contain all the parts needed to connect LTS's series of 5-inch LCD197 displays to devices with a HDMI video output port. LCD197 is a high brightness and wide gamut LCD display with a native MIPI interface. Kit LCDK197CTL1ARH01 also supports capacitive touch over a USBC connection. The adapter board, SODIMM, and the LCD panel are powered via the included 5V, 2A power adapter. HDMI and USBC cables are not included in the kits.

Figure 1 and Figure 2 show the kits assembled apart from the power adapter. Figure 2 shows the LCD with the additional connection for touch support. The LCD has a QR code. Scanning the QR code will reveal the LCD part number followed by a date-serial number. The general LCD QR code is:

- <LCD part number> [<4-digit year><2-digit month><2-digit day>]-<serial number>



Figure 1 LCDK197NTL0NCH01 assembled



Figure 2 LCDK197CTL1ARH01 assembled

General Specification

| Item | Specification | Unit |
|---|---------------------------------|-------------------|
| Outline Dimensions – Carrier Board + SODIMM | 100(W) x 74(L) x 14(H) | mm |
| Adapted Displays | LCD197 series | - |
| Outline Dimensions – LCD197 series without cover lens | 75.88(W) x 119.47(L) x 3(H) | mm |
| Outline Dimensions – LCD197 series with cover lens | 75.88(W) x 119.47(L) x 4.20(H) | mm |
| Number of Dots – LCD197 series | 1080 x 1920 | - |
| LCD Type – LCD197 series | IPS 16.7M Display Color by 8bit | - |
| Backlight Type – LCD197 series | LED White High Gamut | - |
| Luminance – LCD197 series | 3000 | cd/m ² |
| Display Size – LCD197 series | 4.97 | inches |

Absolute Max Ratings

| Item | Symbol | Value | | Unit |
|-----------------------|------------------|-------|-----|------|
| | | Min | Max | |
| Power Supply Voltage | VCC | -0.3 | 13 | V |
| Operating Temperature | T _{OPR} | -10 | 50 | °C |
| Storage Temperature | T _{STG} | -20 | 70 | °C |

Electrical Characteristics

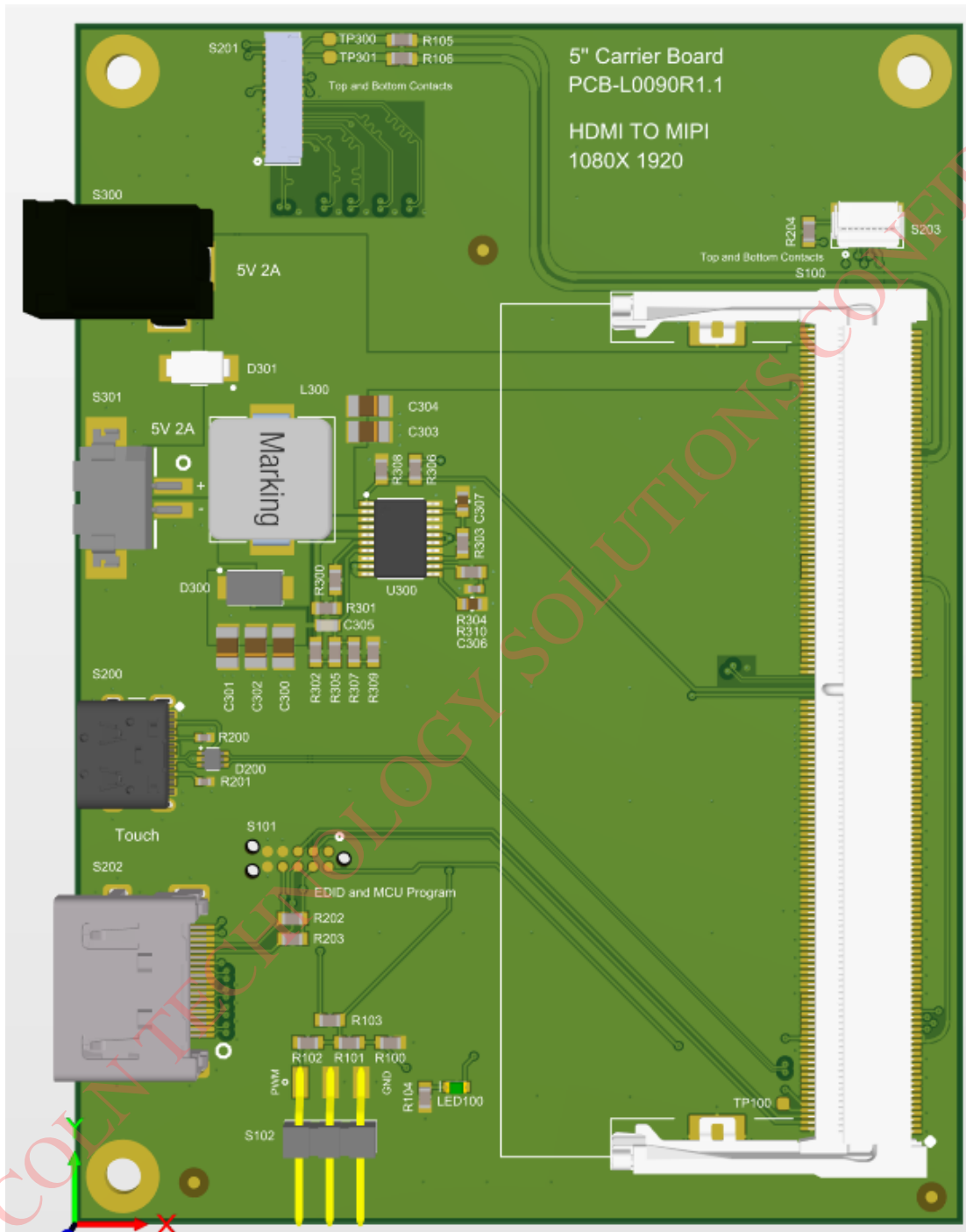
Total Power is for the SODIMM + Carrier Board + LCD197 with backlight. Backlight Power can be reduced by using the PWM signal on [S102](#) pin 1 on the Carrier Board.

| Item | Symbol | Value | | | Unit | Note |
|-----------------|------------------|-------|------|------|------|-----------------------|
| | | Min | Typ | Max | | |
| Supply Voltage | VCC | 4.75 | 5.0 | 5.25 | V | Ta = 25°C |
| Total Power | P _{TOT} | - | 6.25 | - | W | Ta = 25°C, PWM = 100% |
| Backlight Power | P _{BL} | - | 4.8 | - | W | Ta = 25°C, PWM = 100% |

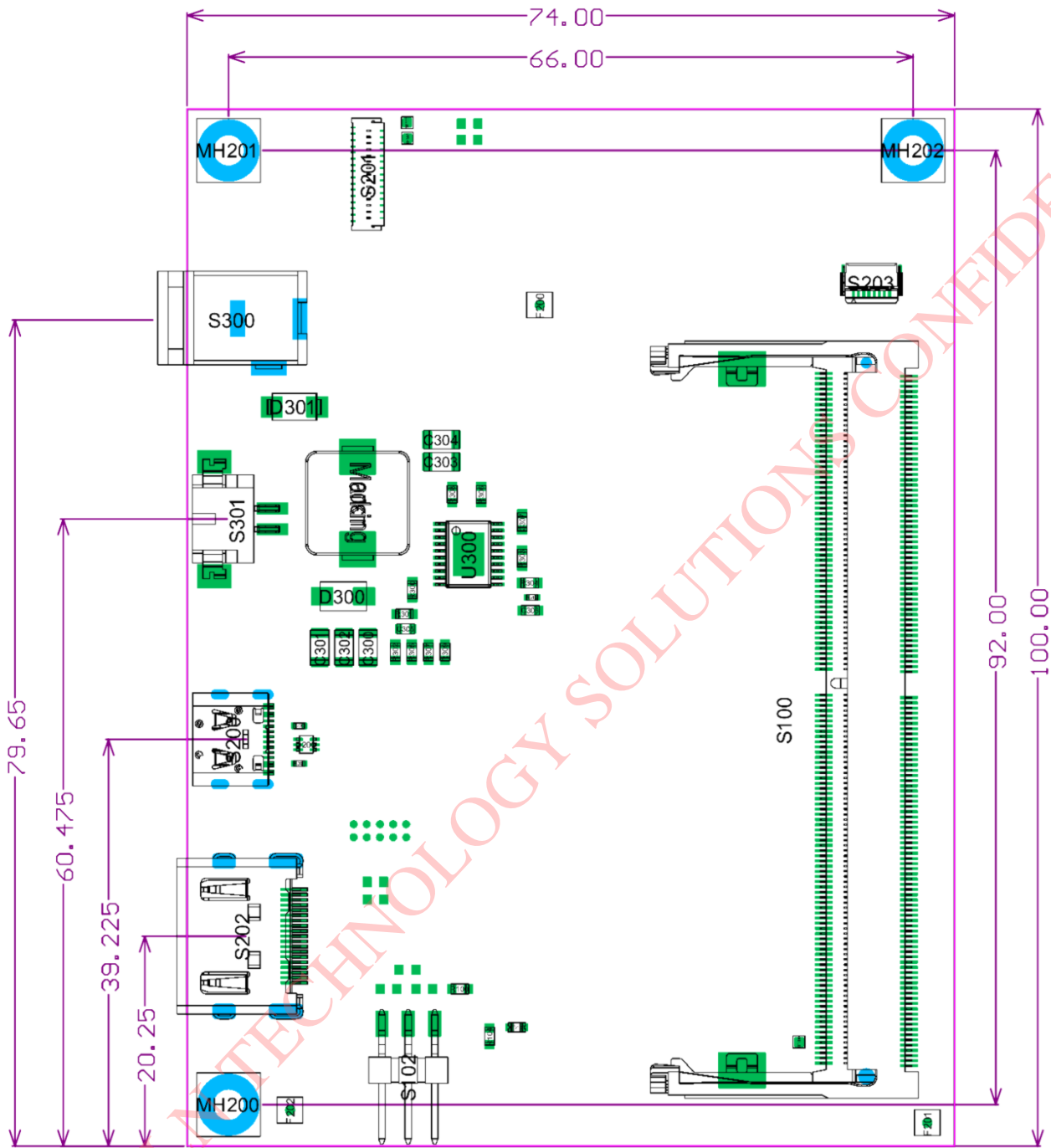
NOTE: Operating LCDK197 backlight at 100% brightness/PWM for extended periods and/or in enclosed spaces or high ambient temperatures can lead to thermal concerns. If any component surface temperature reaches 60°C, use some form of thermal management or use external PWM control to prevent further temperature increase.

Pictorial

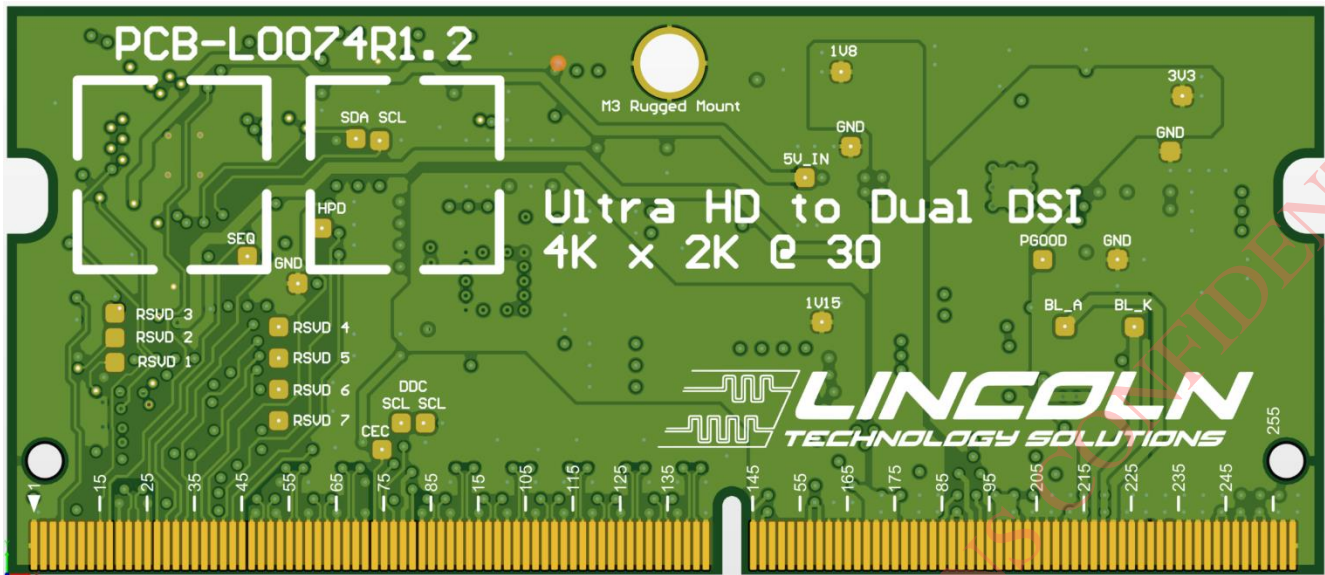
Carrier Board – 3D Rendering



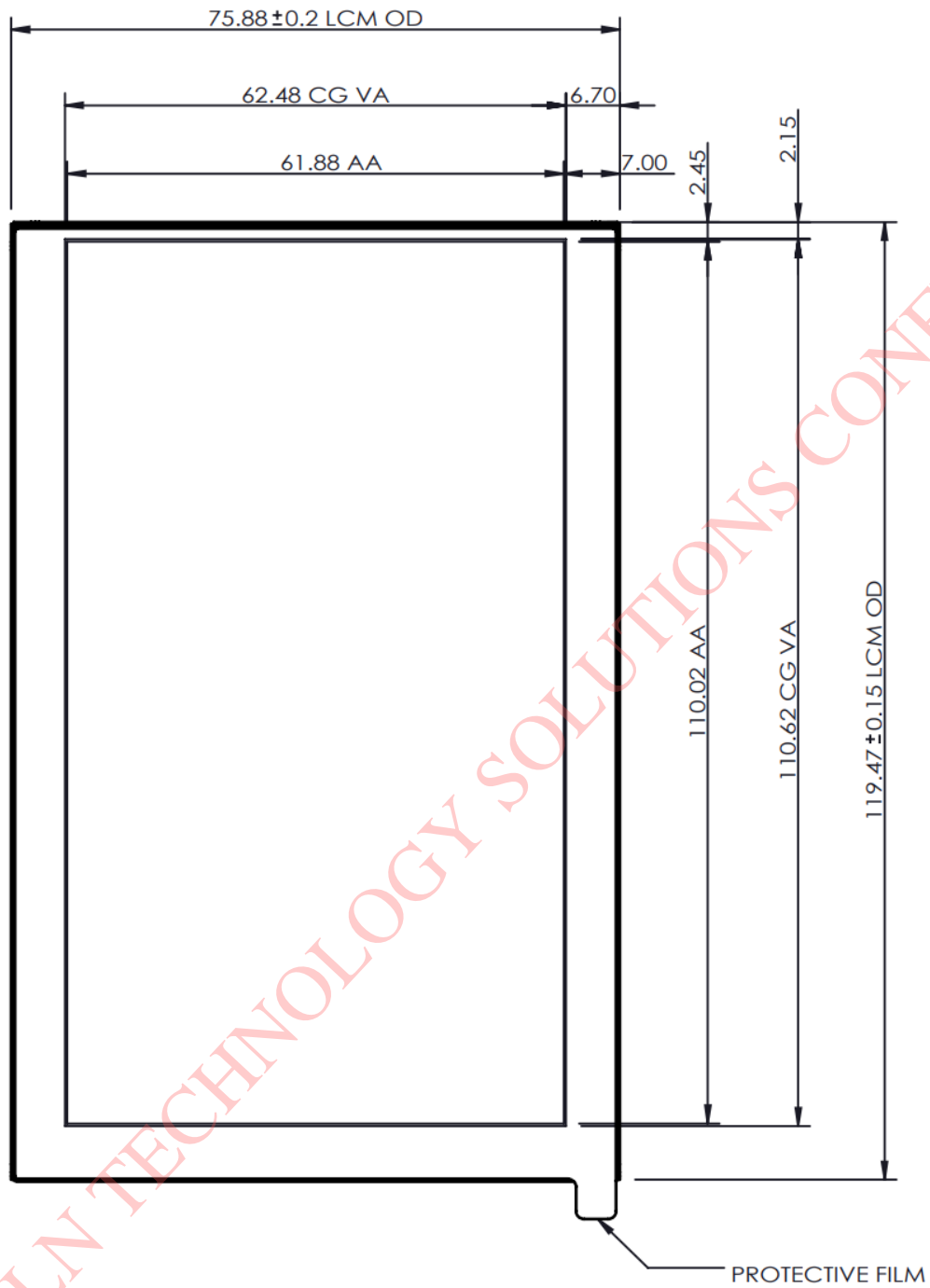
Carrier Board – Mechanical



SODIMM – 3D Rendering

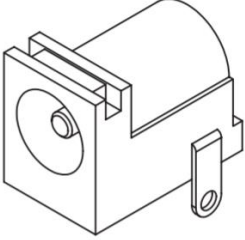
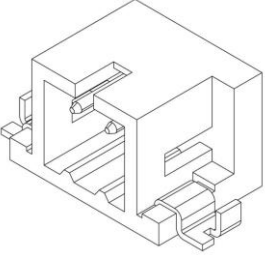
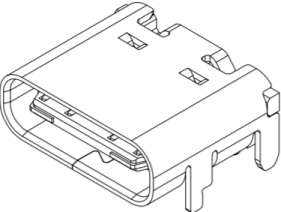
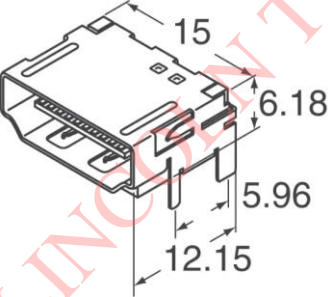


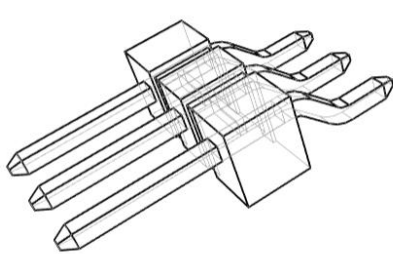
LCD mechanical



Note: Variant with cover lens is shown here.

Connectors

| Connector Type | MPN | Description |
|--|-----------------|--|
| Power Jack S300  | PJ-002AH | Power input (VCC) 2.10mm ID (0.083") 5.50mm OD (0.217") 5V/2A input |
| 2 POS Power Connector S301  | DF3EA-2P-2H(21) | Alternate power input connector 5V/2A input |
| USB Type C S200  | TYPE-C-31-M-12 | Touch output USB-C 16 position |
| HDMI S202  | 0471510001 | Graphic input Standard Type A 19 position |

| Connector Type | MPN | Description |
|--|-----------------|--|
| 3 POS Header S102  | TSM-103-01-T-SH | 3 position header for external PWM control |

S300, Power Jack

| Number | Pin Name | Description |
|--------|----------|-----------------------|
| 1 | VCC | 5V power supply input |
| 2 | GND | Ground |
| 3 | GND | Ground |

S301, 2 pin Power

| Number | Pin Name | Description |
|--------|----------|-----------------------|
| 1 | VCC | 5V power supply input |
| 2 | GND | Ground |

S200, USB-C

The USB-C is a standard connector supporting USB connection between the Carrier Board and a USB Host. The SODIMM translates the in-cell touchscreen data from I2C to USB-HID at full speed data rates.

S202, HDMI

The HDMI connector is a standard type A. It is plug and play with standard equipment. The HDMI port must be capable of providing portrait display (1080 x 1920). There is an onboard EDID that communicates with user equipment specifying timing and display size.

S102, PWM

A 0.1" pitch header is provided as optional user flexibility. It is possible to provide an external PWM signal.

| Number | Pin Name | Description |
|--------|----------|----------------------|
| 1 | PWMO_EXT | External PWM control |
| 2 | GND | Ground |
| 3 | GND | Ground |

The PWM signal is pulled high by default making the backlight fully on. There are three different ways to control PWM signal. Currently these 3 options are disabled on the carrier board.

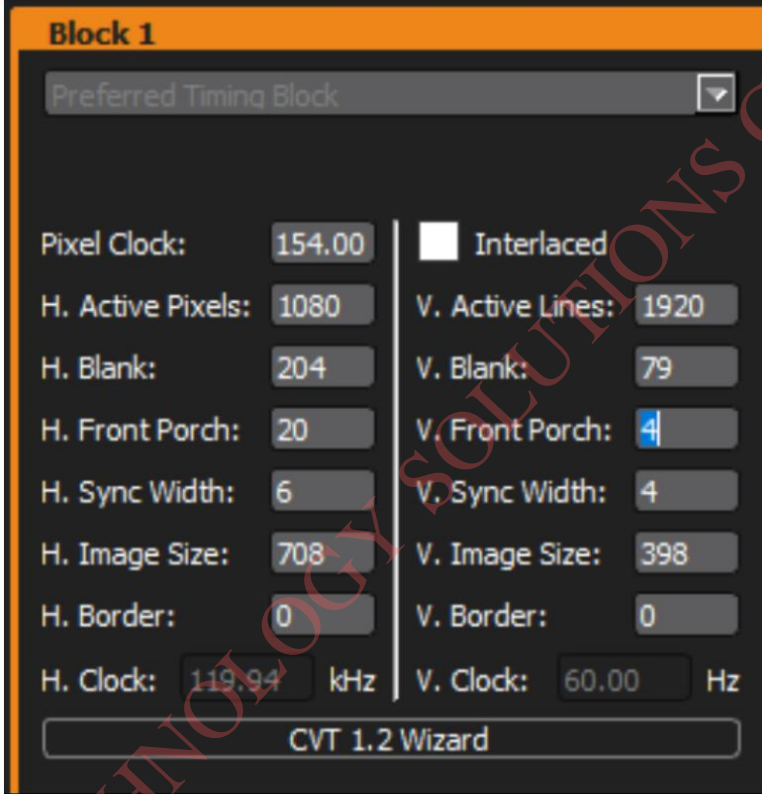
1. PWM control by SODIMM.
2. PWM control by LCD.
3. PWM control by external signal using the connector S102 pin 1.

Note: For more information on enabling PWM with this kit contact LTS.

HDMI

It is expected the host driving HDMI can satisfy the timing requirements as found in the EDID section below. Most Windows OS systems can output the native timing requirements and furthermore are able to rotate and flip the screen. There are dozens of Linux based platforms that are compatible as well.

EDID parameters



The image shows a screenshot of the CVT 1.2 Wizard interface, which is used for configuring EDID parameters. The interface is titled "Block 1" and features a "Preferred Timing Block" dropdown menu. The parameters are organized into two columns, with a vertical line separating them. The left column contains parameters for horizontal timing, and the right column contains parameters for vertical timing. Each parameter is represented by a text input field. The "Interlaced" checkbox is currently unchecked. The "H. Clock" and "V. Clock" fields include units of kHz and Hz, respectively. The "CVT 1.2 Wizard" label is visible at the bottom of the interface.

| Parameter | Value |
|-------------------|------------|
| Pixel Clock: | 154.00 |
| H. Active Pixels: | 1080 |
| H. Blank: | 204 |
| H. Front Porch: | 20 |
| H. Sync Width: | 6 |
| H. Image Size: | 708 |
| H. Border: | 0 |
| H. Clock: | 119.94 kHz |
| V. Active Lines: | 1920 |
| V. Blank: | 79 |
| V. Front Porch: | 4 |
| V. Sync Width: | 4 |
| V. Image Size: | 398 |
| V. Border: | 0 |
| V. Clock: | 60.00 Hz |

Use Case

1. Insert the SODIMM into the Carrier Board.
2. Connect the FFC from LCD197 to S201 and for the touch version of LCD197 connect the second FFC to S203 on the Carrier Board. The connectors on the carrier board have latches to secure the FFC cables
3. To send video data to LCD197, connect a HDMI cable between a video source (e.g. PC) and the HDMI port at S202 on the Carrier Board.
4. To read touchscreen data, connect a USB cable between a PC and USB-C at S200 on the Carrier Board.
5. Connect power supply.

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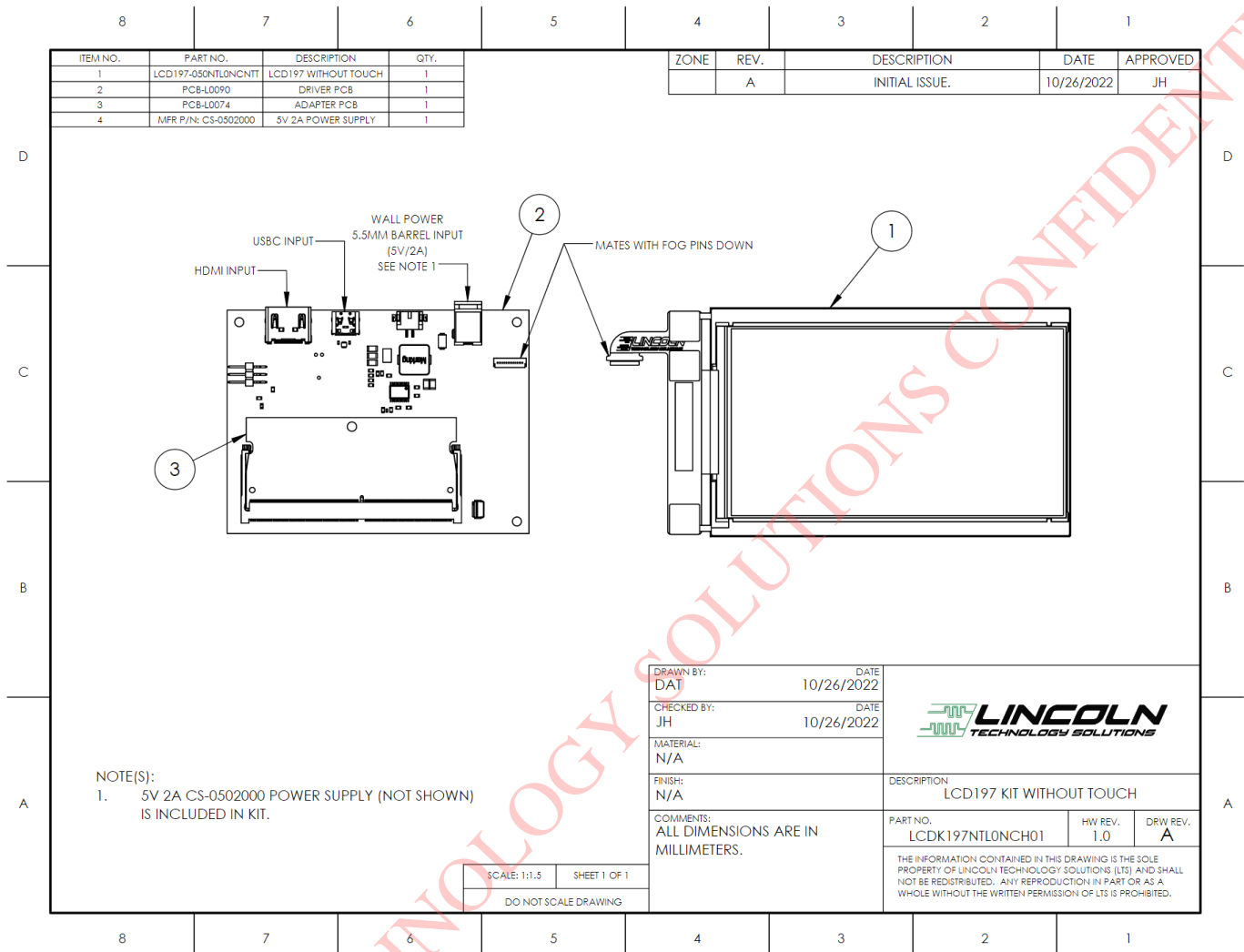
Warnings

1. Insert the SODIMM into the Carrier Board and connect LCD197 before applying power to the Carrier Board.
2. Removing the SODIMM with power connected may cause permanent damage to both the SODIMM and the Carrier Board.

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Appendix 1: Mechanical Drawing

LCDK197NTL0NCH01 drawing



LCDK197CTL1ARH01 drawing

