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LCDK132CTL1ARH01

Kit to Interface with LCD132 over HDMI and USB

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Approvals	
Model Number	LCDK132CTL1ARH01
Datasheet Revision	1.1
Drawing Revision	A

Table of Contents

Document Revision History

Date	Version #	Description	Created by	Checked by	Approved by
Mar 2022	1.0	Customer Release	-	-	-
Oct 2022	1.1	Updated kit part number to new standard. Updated PCB part number.	DA	KB	JH

Ordering Information

LTS Part #	Parts in Kit	Name (Description)
LCDK132CTL1ARH01R1.0	PCB-L00149R1.0	Carrier Board (7 Inch, HB)
	PCB-L0074R1.1	SODIMM (HDMI to MIPI)
	LCD132-070CTL1ARNTTR1.1	LCD132 (7" HBWG In-Cell Touch 1200 x 1920)
	0151660429[1]	FFC (Cable FFC 40Pos 0.50mm 3")
	CHANZON 2ABL024F[1]	Power Supply (12V 2A)

Note 1: these part numbers are subject to change and may be replaced with equivalent parts.

Product Description

LCD132 requires multiple industry standard interfaces (MIPI, I2C, Backlight Driver, and various regulated voltages) which make it well-suited for a cost-efficient and high-performance product integration. However, the required interfaces may not be well supported in all evaluation and product development environments. To ease the initial evaluation and development effort with LCD132, LCDK132 is offered. LCDK132 only requires HDMI for video, USB for touchscreen data, and a single power supply.

Compatibility

High resolution MIPI panels are most commonly native portrait orientation. The two most common resolutions supported by this module are FHD (1080x1920) and WUXGA (1200x1920). Moreover, the module can drive up to 4K*2K resolutions so running multiple panels from this SODIMM is also possible. 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. It must be noted that if your application is only designed for landscape mode, the GUI or capable hardware block must buffer and transpose from landscape to portrait, as there is no external buffering capability on either the SODIMM or the Carrier Board.

General Specification

| Item	Specification	Unit
Outline Dimensions – Carrier Board + SODIMM	82(W) x 90(L) x 14(H)	mm
Outline Dimensions – FFC	76(L)	mm
Outline Dimensions – LCD132	112(W) x 202(L) x 6(H)	mm
Outline Dimensions – Overall, Maximum	112(W) x 368(L) x 14(H)	mm
Adapted Display	LCD132	-
Display Size	7.02	inches

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Pictorial

Carrier Board – 3D Rendering
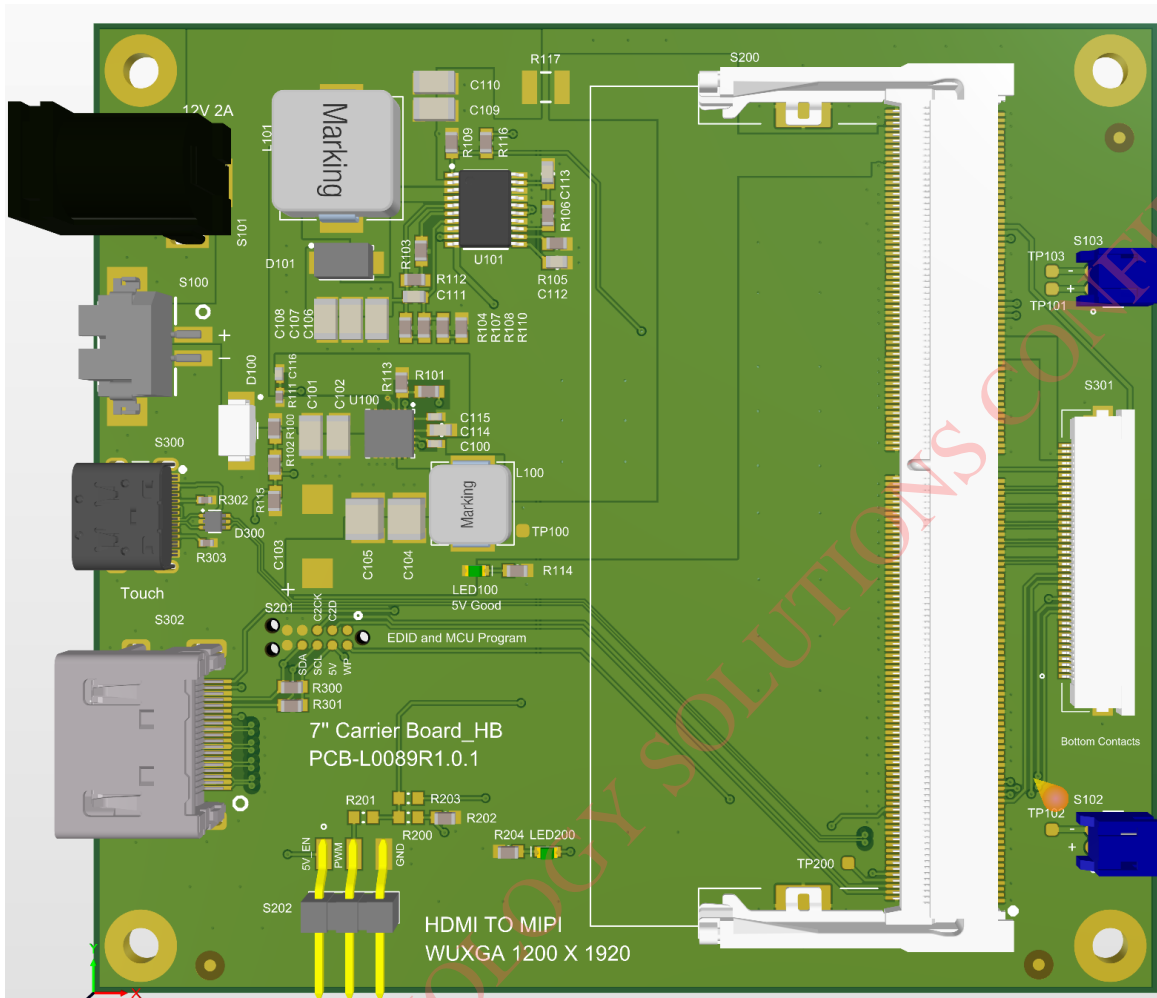
Carrier Board – Mechanical
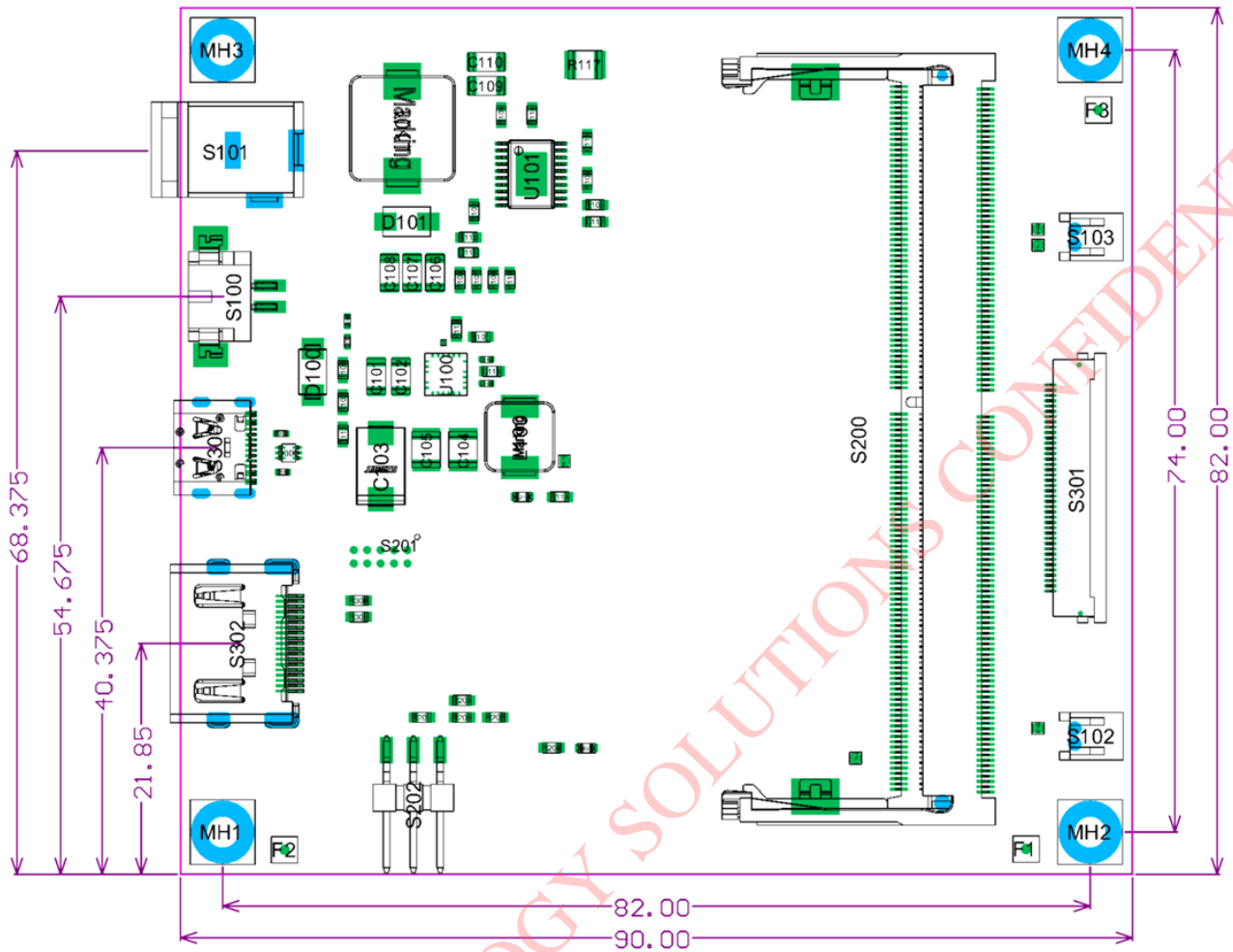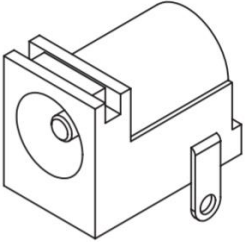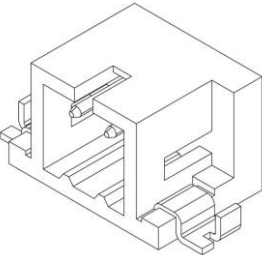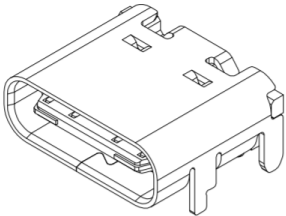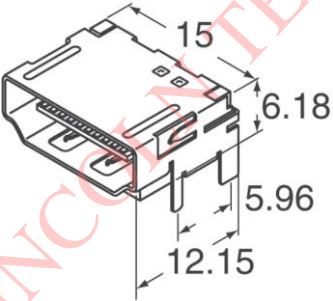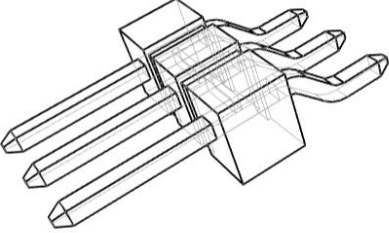
SODIMM – 3D Rendering
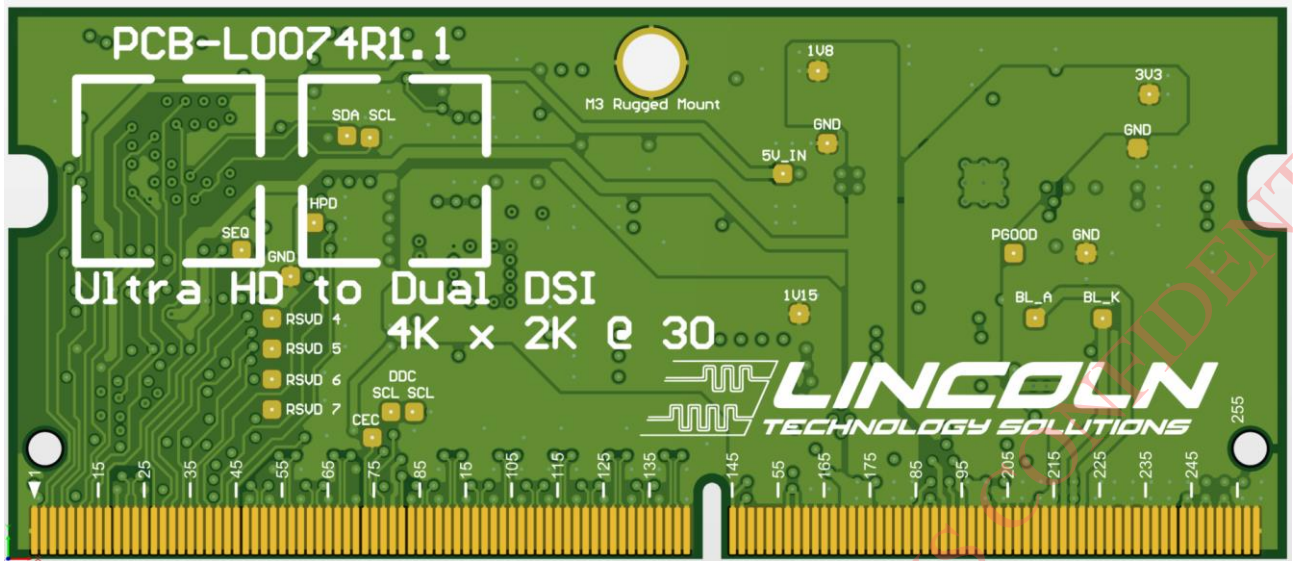
Connectors

Connector Type	MPN	Description
Power Jack S101	PJ-002AH	Power input (VCC) 2.10mm ID (0.083") 5.50mm OD (0.217") 12V/2A input
2 POS Power Connector S100	DF3EA-2P-2H(21)	Alternate power input connector 12V/2A input
USB Type C S300	TYPE-C-31-M-12	Touch output USB-C 16 position
HDMI S302	0471510001	Graphic input Standard Type A 19 position

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3 POS Header S202	TSM-103-01-T-SH	3 position header for 5V enable and external PWM control

Pin Out – S300, USB-C

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

Pin Out – S302, HDMI

The HDMI connector is a standardized type A. It is plug and play with standard equipment. The graphical input must be capable of providing a WUGXA portrait image (1200x1920). There is onboard EDID that communicates with user equipment specifying timing and display size.

Pin Out – S101, Power Jack

Number	Pin Name	Description
1	VCC	12V power supply input
2	GND	Ground
3	GND	Ground

Pin Out – S100, 2 pin Power

Number	Pin Name	Description
1	VCC	12V power supply input
2	GND	Ground

Pin Out – S202, PWM

A 0.1" pitch header is provided as optional user flexibility. It is possible to control the enabling aka power on of the SODIMM. It is also possible to provide an external PWM signal.

Number	Pin Name	Description
1	5V_EN	Active high enable signal for 5V. This is pulled high on carrier board. Can be used to disable kit power without unplugging 12V input.
2	PWMO_EXT	External PWM control
3	GND	Ground

The PWM signal is pulled high by default making the backlight fully on. There are three different ways to control the PWM signal.

1. PWM control by SODIMM.

2. PWM control by LCD132.

3. PWM control by external signal using the connector S202 pin2.

If assistance with control of LCD dimming is needed, contact LTS.

EDID

Below is the EDID stored on the SODIMM. This is communicated over the DDC bus to the host. The host must be capable of generating timing based on these parameters. In the absence of EDID communication, it is expected the host is capable of video output using these timing specifications.

7" WUXGA

Native Portrait 1200x1920

EDID BYTES:

0x   00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F

‑‑

00 | 00 FF FF FF FF FF FF 00 32 8D 00 00 00 00 00 00

01 | 2D 1B 01 04 80 58 32 78 22 EE 91 A3 54 4C 99 26

02 | 0F 50 54 00 00 00 01 01 01 01 01 01 01 01 01 01

03 | 01 01 01 01 01 01 80 3F B0 94 40 80 5A 70 46 08

04 | 42 00 C4 8E 21 00 00 1E 00 00 00 10 00 00 00 00

05 | 00 00 00 00 00 00 00 00 00 00 00 00 00 10 00 00

06 | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 FC

07 | 00 31 32 30 30 06 35 08 32 30 0A 20 20 20 00 76

08 | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

09 | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

0A | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

0B | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

0C | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

0D | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

0E | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

0F | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

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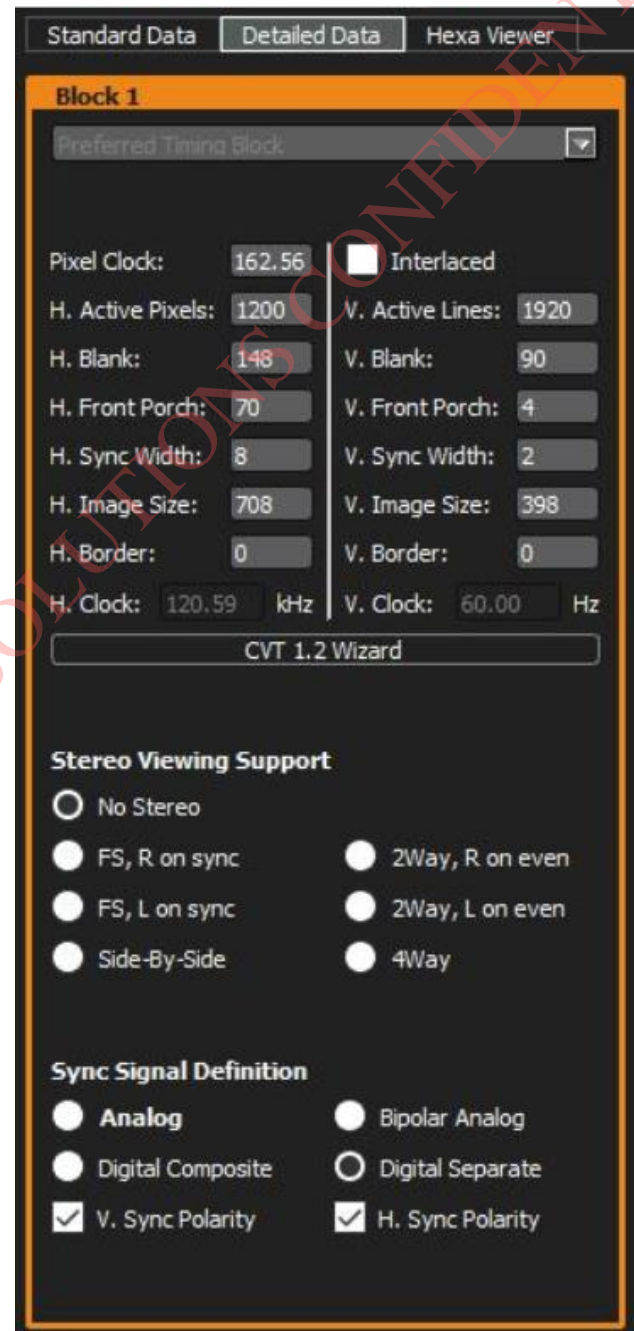
Absolute Max Ratings

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 + LCD132 (with backlight). Backlight Power can be reduced by using the PWM signal on S202 on the Carrier Board.

Item	Symbol	Value			Unit	Note
		Min	**Typ**	**Max**		
Supply Voltage	VCC	11.4	12.0	12.6	V	Ta = 25°C
Total Power	P_{TOT}	-	10.6	-	W	Ta = 25°C, PWM = 100%
Backlight Power	P_{BL}	-	9.0	-	W	Ta = 25°C, PWM = 100%

NOTE: Operating LCDK132 backlight at 100% 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 (active or passive) or use External PWM control to prevent further temperature increase.

Use Case

1. Insert the SODIMM into the Carrier Board.

2. Use the FFC to connect LCD132 to S301 on the Carrier Board.

3. Connect the two cabled backlight connectors on LCD132 to S102 and S103 on the Carrier Board.

4. Apply power using the Power Supply.

5. To send video data to LCD132, connect an HDMI cable between a video source (e.g. PC) and S302 on the Carrier Board.

6. To receive touchscreen input, connect a USB cable between a PC and S300 on the Carrier Board.

External PWM Control

Perform the following steps to use external PWM control.

1. Remove R116 (0-ohm resistor) and place it on R201.

2. Connect external PWM signal to S202 pin2 (PWM), signal high level range from 1.17V to 6V.

3. A 0% duty cycle turns off the backlight, a 100% duty cycle provides full brightness.

4. Recommended frequency is 200Hz.
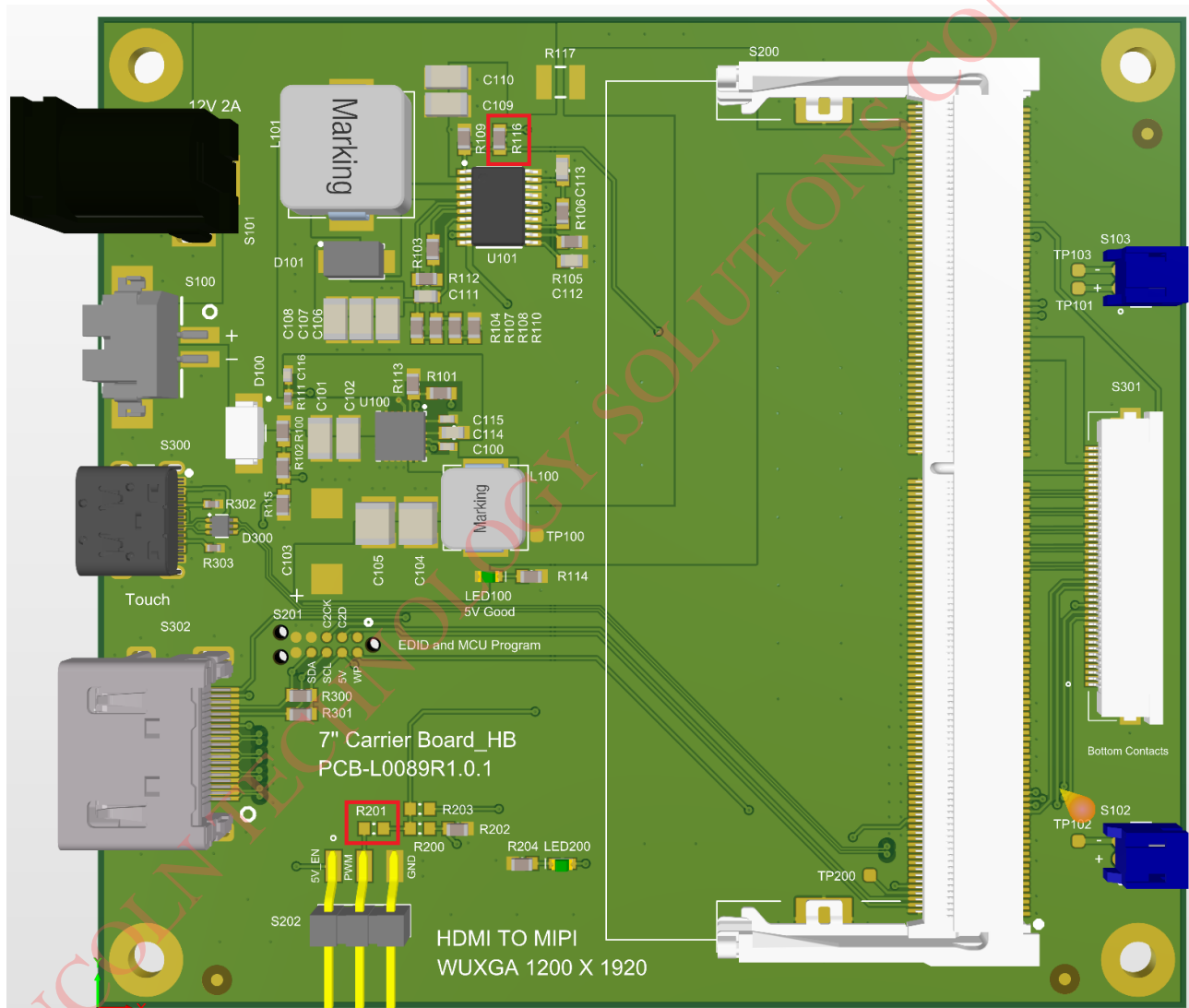
Warnings

1. Insert the SODIMM into the Carrier Board and connect LCD132 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.

Appendix 1: Mechanical Drawing

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	LCD132-070CTL1ARNTT	LCD132	1
2	PCB-L0149	DRIVER PCB	1
3	PCB-L0074	ADAPTER PCB	1
4	MFR P/N: 0151660429	40-PIN FLEX 3IN	1
5	MFR P/N: 2ABL024F	12V 2A POWER SUPPLY	1

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL ISSUE	10/21/2022	JH

PIN 1 TO PIN 1

WALL POWER
5.5MM BARREL INPUT
(12V/2A)
SEE NOTE 1

USBC INPUT

HDMI INPUT

PIN 1 TO PIN 40
(BOTTOM CONTACTS,
PINS FACE DOWN)

NOTE(S):
1. 12V 2A 2ABL024F POWER SUPPLY (NOT SHOWN) IS INCLUDED IN KIT.

DRAWN BY: DAT	DATE 10/21/2022
CHECKED BY: JH	DATE 10/21/2022

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MATERIAL: N/A

FINISH: N/A

DESCRIPTION: LCD132 KIT

COMMENTS:
ALL DIMENSIONS ARE IN MILLIMETERS.

PART NO. LCDK132CTL1ARH01	HW REV. 1.0	DRW REV. A

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SCALE: 1:2 | SHEET 1 OF 1

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