



LCDK281CTL1ARH01

Kit to Interface with LCD281 over HDMI and USB

111 Corning Road, Suite 116 • Cary, NC 27518

Approvals	
Model Number	LCDK281CTL1ARH01
Datasheet Revision	1.1
Drawing Revision	B

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Customer Approval	
Approved by: _____	Date: _____

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Revision History

Document Revision

Date	Version #	Description	Created By	Checked By	Quality Approval By	Approved By
5.14.2025	0.1	Preliminary Release	ST	KV	--	JH
6.27.2025	1.0	Production Release. Updated drawing, updated Hardware Revision from 0.1 to 1.0, updated Ordering Information table:	ST	KV	TT	JH
8.7.2025	1.1	Added PCB-L0074R1.2 to Ordering Information table, added SODIMM-3D Rendering PCB-L0074R1.2 image	ST	ZA	TT	JH

Hardware Revision

Date	Version #	Description
5.9.2025	0.1	Prototype Release
6.27.2025	1.0	Production Release

Ordering Information

LTS Part #	Quantity	Parts in Kit	Name (Description)
LCDK281CTL1ARH01R1.0	1	PCB-L0089R1.1	Carrier Board (7 Inch, HB)
	1	PCB-L0074R1.2 or PCB-L0074R1.3	SODIMM (HDMI to MIPI)
	1	LCD281-070CTL1ARNTR1.0	LCD281 (7" HBWG In-Cell Touch 1200 x 1920)
	1	PCB-L0170R3.2	FALD Driver Board
	1	11613R1.1	Backlight Power from PCB-L0170
	2	0151660429 ¹	FFC (Cable FFC 40Pos 0.50mm 3")
	1	FPC-L0016R1.0	Backlight FPC
	1	11610R1.0	PCB-L0089 to PCB-L0170 2 wire power jumper cable
	1	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

LCD281 requires multiple industry standard interfaces (MIPI, I2C, Backlight Driver, and various regulated voltages) which make it well-suited for 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 LCD281, LCDK281 is offered. LCDK281 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. 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.

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General Specification

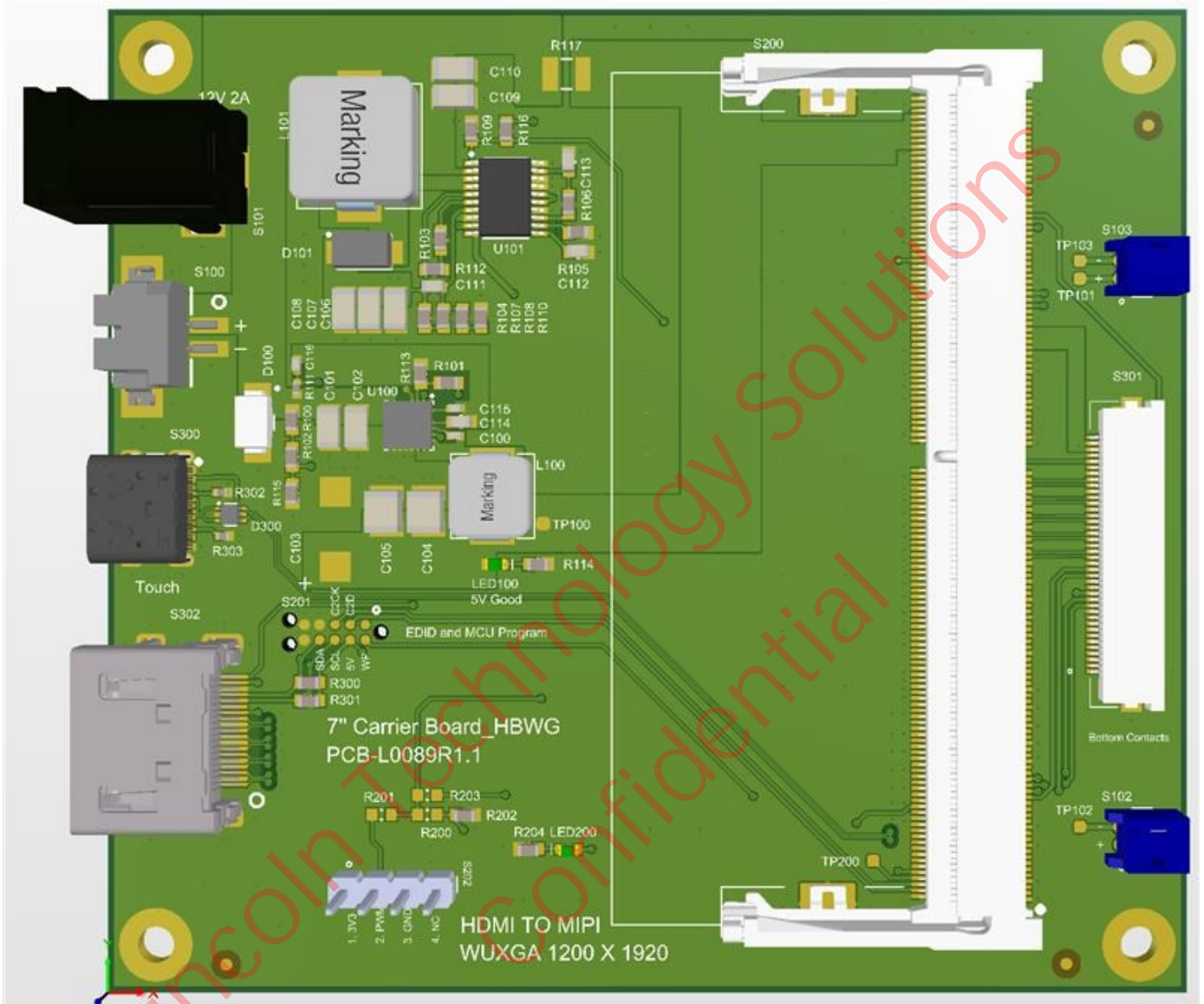
Item	Specification	Unit
Active Area—LCD281	94.5(H) x 151.2(V)	mm
Backlight Type	1000 zone full array local dimming	-
Display Size	7.02	inches
Outline Dimensions – Carrier Board + SODIMM	82(W) x 90(L) x 14(H)	mm
Outline Dimensions – FFC (Flat Flexible Cable)	20.5(W) x 76(L) x 0.3(H)	mm
Outline Dimensions - FPC	14.5(W) x 200(L) x 0.3(H)	mm
Outline Dimensions – FALD Driver Board	77.9(W) x 88.2(L) x 40.6(H)	Mm
Resolution	1200 X 1920	pixels

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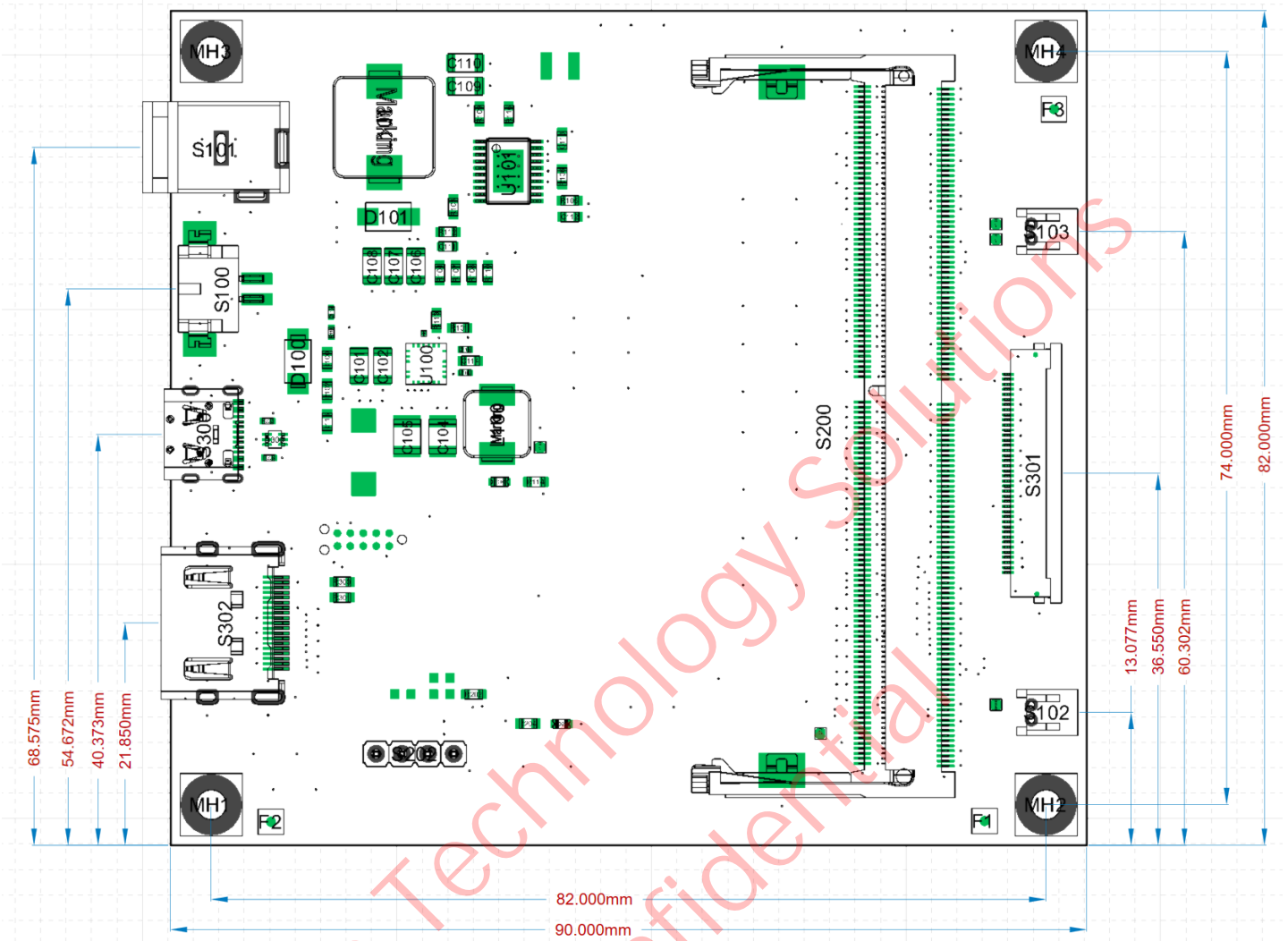
Pictorial

Pin 1 for connectors is indicated by a silk screen dot next to the connector.

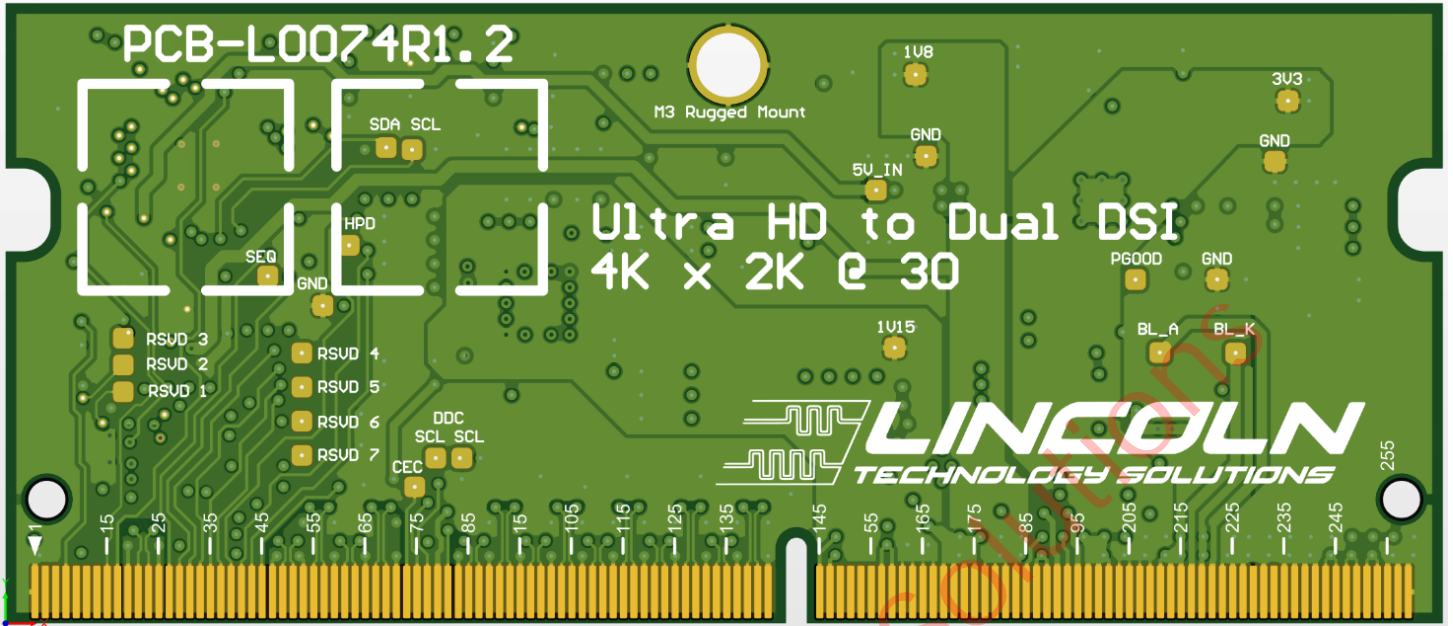
Carrier Board – 3D Rendering, PCB-L0089R1.1



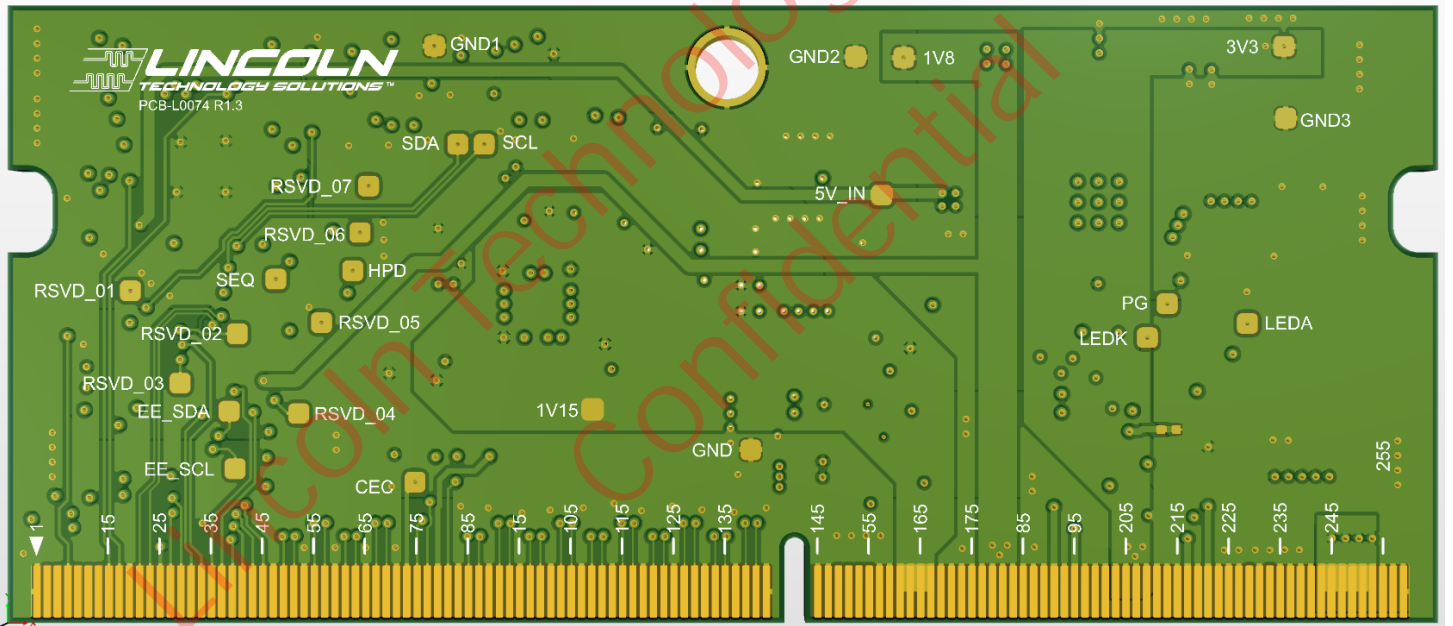
Carrier Board – Mechanical, PCB-0089R1.1



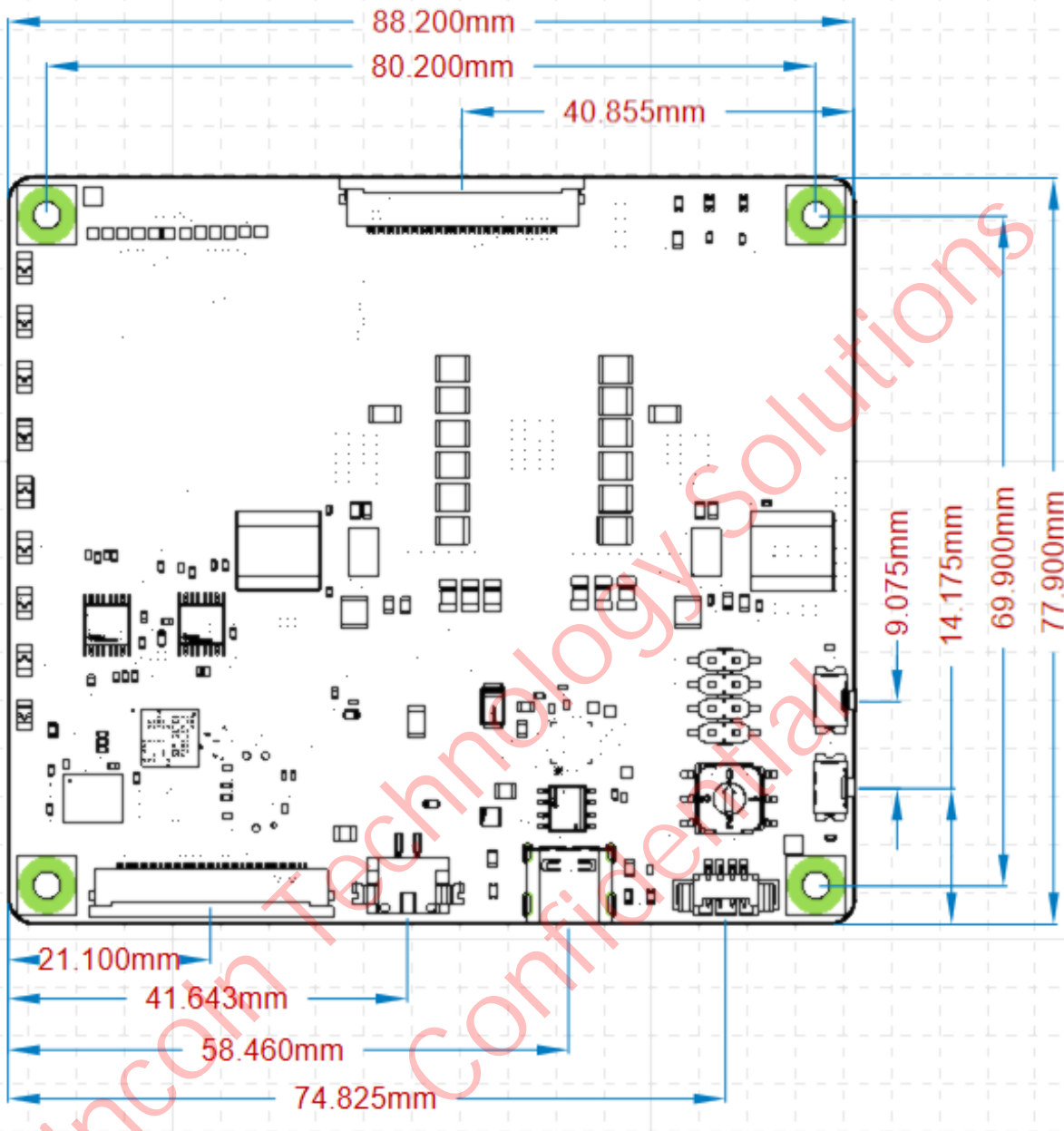
SODIMM – 3D Rendering PCB-L0074R1.2



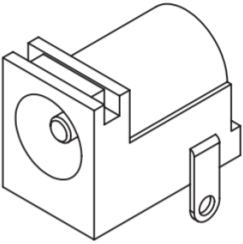
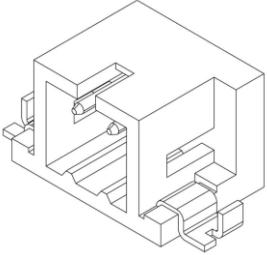
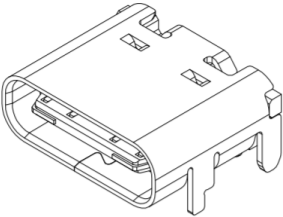
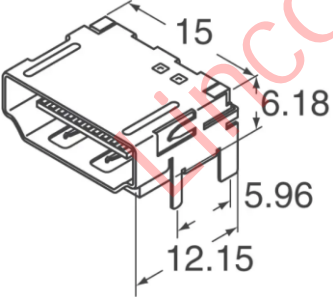
SODIMM – 3D Rendering, PCB-L0074R1.3

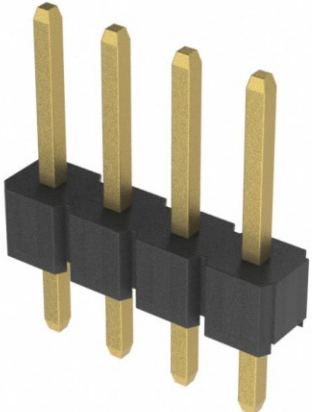


FALD Driver Board – Mechanical, PCB-L0170R3.2



Connectors – Carrier Board, PCB-L0089R1.1

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

<p>4 POS Header S202, PCB-L0089R1.1</p> 	<p>PH1-04-UA</p>	<p>4 position header for LTS use</p>
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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, PCB-L0089R1.1

S202 is not used with this kit. Pin out below is provided so that power and ground are not accidentally connected.

Number	Pin Name	Description
1	3V_EN	Do not connect
2	PWMO_EXT	Unused
3	GND	Ground
4	NC	No Connect

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Connectors – FALD Driver Board, PCB-L0170R3.2

Connector Type	MPN	Description
<p>ZIF Connector S304</p> 	<p>62684-401100ALF</p>	<p>Data from PCB-L0089</p> <p>40 Position</p> <p>Bottom Contact</p> <p>Pitch 0.020" (0.50mm)</p>
<p>ZIF Connector S305</p> 	<p>62684-401100ALF</p>	<p>Data to LCD</p> <p>40 Position</p> <p>Bottom Contact</p> <p>Pitch 0.020" (0.50mm)</p>
<p>2 POS Power Connector S306</p> 	<p>DF3E-2P-2H(24)</p>	<p>Power input connector from PCB-L0089</p> <p>12V/2A Input</p>
<p>USB 3.2 Type C S303</p> 	<p>1054500101</p>	<p>USB-C alternate power in</p> <p>USB-C 24 Position for future use</p> <p>Do not connect</p>

<p>Header S103</p> 	<p>0532610471</p>	<p>UART Debug</p> <p>Detent Lock</p> <p>4 Position</p>
<p>Header S600</p> 	<p>TSM-104-01-T-DV</p>	<p>8 Position Header</p> <p>Internal LTS use only</p>
<p>Flip Lock Connector S300</p> 	<p>FH41-28S-0.5SH(05)</p>	<p>FALD Control</p> <p>28 Position</p> <p>Bottom Contact</p> <p>Pitch 0.020" (0.50mm)</p>
<p>FALD Power S301/S302</p> 	<p>208294-0040</p>	<p>Backlight Power</p> <p>4 Position</p> <p>5V/5A</p>

Pin Out – S304, 40 Pin

Number	Pin Name	Description
1,6,26,27,31,32,33,36,39,40	NC	No Connect
2,3	LCD_1V8	1.8V Power to LCD
4,7,10,13,16,19,22,25,30	GND	Ground
5	LCD_RST	LCD Reset
8	MIPIIS_D0_N	MIPI Source Data Lane 0 Negative
9	MIPIIS_D0_P	MIPI Source Data Lane 0 Positive
11	MIPIIS_D1_N	MIPI Source Data Lane 1 Negative
12	MIPIIS_D1_P	MIPI Source Data Lane 1 Positive
14	MIPIIS_CK_N	MIPI Source Clock Negative
15	MIPIIS_CK_P	MIPI Source Clock Positive
17	MIPIIS_D2_N	MIPI Source Data Lane 2 Negative
18	MIPIIS_D2_P	MIPI Source Data Lane 2 Positive
20	MIPIIS_D3_N	MIPI Source Data Lane 3 Negative
21	MIPIIS_D3_P	MIPI Source Data Lane 3 Positive
23	TP_SCL	Touch Panel Signal Clock 1.8V
24	TP_SDA	Touch Panel Signal Data 1.8V
28	TP_INT	Touch Panel Interrupt 1.8V
29	TP_RST	Touch Panel Reset 1.8V
34,35	VSN-	Voltage Supply Negative -5.5V
37,38	VSP+	Voltage Supply Positive 5.5V

Pin Out – S305, 40 Pin

Number	Pin Name	Description
1,2,5,8,9,10,14,15,35,40	NC	No Connect
3,4	VSP+	Voltage Supply Positive 5.5V
6,7	VSN-	Voltage Supply Negative -5.5V
11,16,19,22,25,28,31,34,37	GND	Ground
12	TP_RST	Touch Panel Reset 1.8V
13	TP_INT	Touch Panel Interrupt 1.8V
17	TP_SDA	Touch Panel Signal Data 1.8V
18	TP_SCL	Touch Panel Signal Clock 1.8V
20	MIPID_D3_P	MIPI Destination Data Lane 3 Positive
21	MIPID_D3_N	MIPI Destination Data Lane 3 Negative
23	MIPID_D2_P	MIPI Destination Data Lane 2 Positive
24	MIPID_D2_N	MIPI Destination Data Lane 2 Negative
26	MIPID_CK_P	MIPI Destination Clock Positive
27	MIPID_CK_N	MIPI Destination Clock Negative
29	MIPID_D1_P	MIPI Destination Data Lane 1 Positive
30	MIPID_D1_N	MIPI Destination Data Lane 1 Negative
32	MIPID_D0_P	MIPI Destination Data Lane 0 Positive
33	MIPID_D0_N	MIPI Destination Data Lane 0 Negative
36	LCD_RST	LCD Reset
38,39	LCD_1V8	1.8V Power to LCD

Pin Out – S306, 2 Pin

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

Pin Out – S103, 4 Pin

Number	Pin Name	Description
1,4	GND	Ground
2	FFU1	Do not connect
3	FFU2	Do not connect

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Pin Out – S300, 28 Pin

Number	Pin Name	Description
1,4,7,10,19,22	GND	Ground
2	SN1	FALD Driver Chip Select 1
3	SCLK1	Signal Clock 1
5	VSYNC1	Vertical Synchronization 1
6	SDI1	Signal Data In 1
8	SDO1	Signal Data Out 1
9	SCKO1	Signal Clock Out 1
11	TEMP1	Temperature Sensor 1 Enable
12	TEMP2	Temperature Sensor 2 Enable
13	TEMP3	Temperature Sensor 3 Enable
14	TEMP4	Temperature Sensor 4 Enable
15	TEMP5	Temperature Sensor 5 Enable
16	TEMP_DQ	Temperature Data Input
17,18	5V	5V FALD PCB Power
20	SCLK2	Signal Clock 2
21	SDI2	Signal Data In 2
23	VSYNC2	Vertical Synchronization 2
24	SN2	FALD Driver Chip Select 2
25	BRD_ID1	Board Identification 1
26	SCKO2	Signal Clock Out 2
27	SDO2	Signal Data Out 2
28	BRD_ID2	Board Identification 2

Pin Out – S301/S302, 4 Pin

Number	Pin Name	Description
1,2	VLED	LED power for FALD backlight, 5V 5A maximum
3,4	GND	Ground

EDID

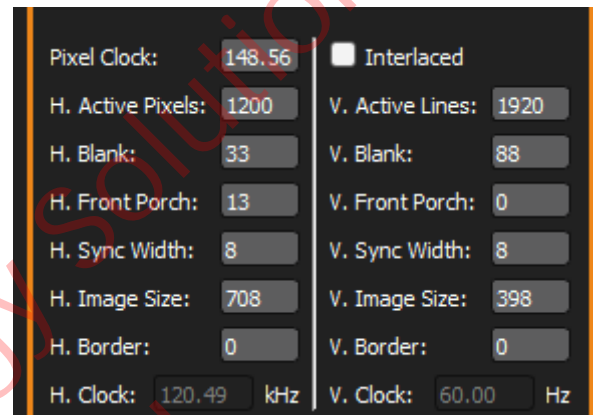
Below is the EDID stored on the SODIMM. This is communicated over the DDC bus to the host. The host must be capable of generating timing based on these parameters. In the absence of EDID communication, it is expected the host is capable of video output using these timing specifications.

7" WUXGA

Native Portrait 1200x1920

EDID BYTES:

	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
10	03	23	01	04	A2	58	32	78	27	EE	91	A3	54	4C	99	26
20	0F	50	54	00	00	00	01	00	01	01	01	01	01	01	01	01
30	01	01	01	01	01	01	08	3A	B0	21	40	80	58	70	0D	08
40	08	00	C4	8E	21	00	00	1E	00	00	00	10	00	00	00	00
50	00	00	00	00	00	00	00	00	00	00	00	00	00	10	00	00
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FC
70	00	31	32	30	30	06	35	08	32	30	0A	20	20	20	00	D7
80	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
90	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00



Absolute Max Ratings

Item	Symbol	Value		Unit
		Min	Max	
Power Supply Voltage	VCC	-0.3	13	V
Operating Temperature	T _{OPR}	-20	70	°C
Storage Temperature	T _{STG}	-30	80	°C

Electrical Characteristics

Total power for the kit.

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}	-	-	23	W	Ta = 25°C
Backlight Power	P _{BL}	-	-	20	W	Ta = 25°C

Note: Operating LCDK281 backlight at high brightness for extended periods and/or in enclosed spaces or high ambient temperatures can lead to thermal concerns. If any component's surface temperature reaches 60°C, use some form of thermal management (active or passive) or use rotary dial or push buttons to reduce peak brightness to prevent further temperature increase.

Use Case

1. Insert the SODIMM PCB-L0074 into the carrier board PCB-L0089.
2. For 2-pin cable, make these connections:
 - a. PCB-L0089 Carrier board S100
 - b. PCB-L0170 FALD driver S306
3. For the first 40-position FFC, make these connections:
 - a. PCB-L0089 Carrier board S301, contacts down
 - b. PCB-L0170 FALD driver S304 (adjacent to the 2-pin cable connector), contacts down.
4. For the second 40-position FFC, make these connections:
 - a. PCB-L0170 FALD driver board S305, contacts down
 - b. LCD flex connector, contacts down
5. For the 28-position FPC, make these connections:
 - a. PCB-L0170 FALD driver board S300 (bottom of board), contacts down
 - b. Connector on rear of backlight, contacts down
6. For the 4-pin backlight cable, make these connections:
 - a. PCB-L0170 FALD driver board S301 (bottom of board), contacts down.
 - b. Connector on rear of backlight, contacts down
7. Connect an HDMI cable and a USB-C cable (for touch if desired) from a PC to the connectors on the carrier board.
8. Connect the 12V/2A barrel jack to the carrier board, then to a 120V wall outlet. The panel will power on.
9. The rotary switch, SW100, on the FALD driver board can be used to set the peak brightness of the backlight between 4 present values.
10. The buttons on the FALD driver, S100 and S101, can be used as fine control of the peak brightness of the backlight within the range set by the rotary switch. S101 increases brightness, S100 decreases brightness.

Warnings

1. Before applying power to the Carrier Board, insert the SODIMM into the Carrier Board and complete all connections.
2. Removing the SODIMM with power connected may cause permanent damage to both the SODIMM and the Carrier Board.
3. This PCB-L0074 has been programmed for the LCD281 Module with the PCB-L0089 Carrier Board.
4. Do not lay the LCD flat on a conductive surface or PCB - components can be shorted. Make sure the backing is insulated.

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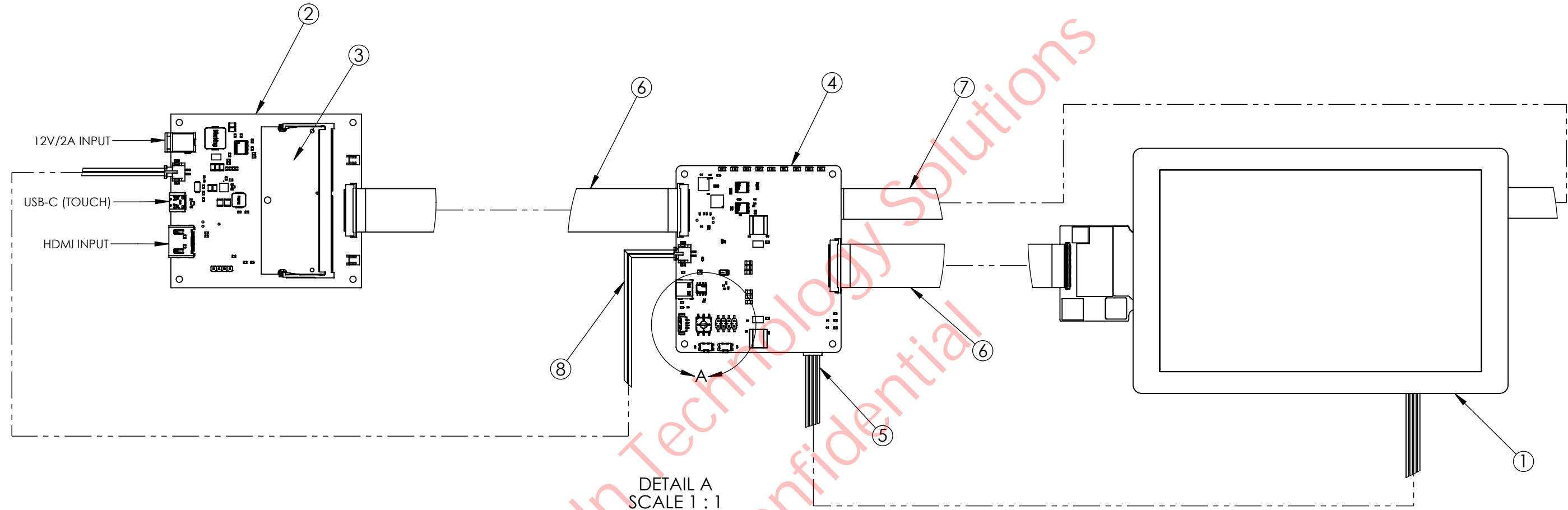
Appendix 1: Mechanical Drawing

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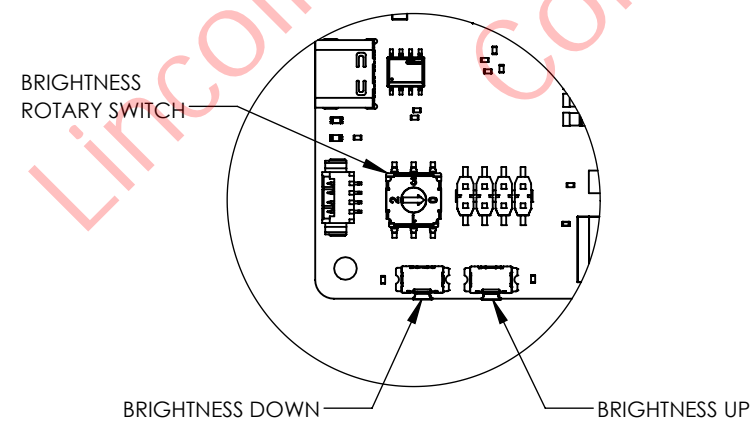
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	LCD281-070CTL1ARNTT	7IN LIGHT-ON-BOARD MULTIPLEXING FALD LCD	1
2	PCB-L0089	CARRIER PCB	1
3	PCB-L0074	SODIMM PCB	1
4	PCB-L0170	FALD DRIVER	1
5	11613	BACKLIGHT POWER CABLE	1
6	151660429	40 PIN FFC, 3IN	2
7	PCB-L0016	BACKLIGHT FPC	1
8	11610	2 PIN POWER JUMPER	1
9	2ABLO24F	POWER SUPPLY 12V/2A	1

REV.	HW REV.	DESCRIPTION	DATE	APPROVED
A	0.1	INITIAL RELEASE	5/9/2025	JH
B	1.0	PRODUCTION RELEASE	6/27/2025	JH

KIT TOP VIEW



DETAIL A
SCALE 1:1



NOTES:

- ALL FPC/FFC SHOULD BE INSERTED INTO CONNECTORS PINS-DOWN.
- THE ROTARY SWITCH CAN BE USED TO SET PEAK BACKLIGHT BRIGHTNESS.
- THE BUTTONS CAN BE USED TO FINELY ADJUST THE PEAK BRIGHTNESS WITHIN THE RANGE SET BY THE ROTARY SWITCH.
- ITEM 9, 12V/2A POWER SUPPLY, IS INCLUDED IN KIT BUT NOT DEPICTED IN DRAWING.

DRAWN BY: KF	DATE 6/27/2025
CHECKED BY: JH	DATE 6/27/2025



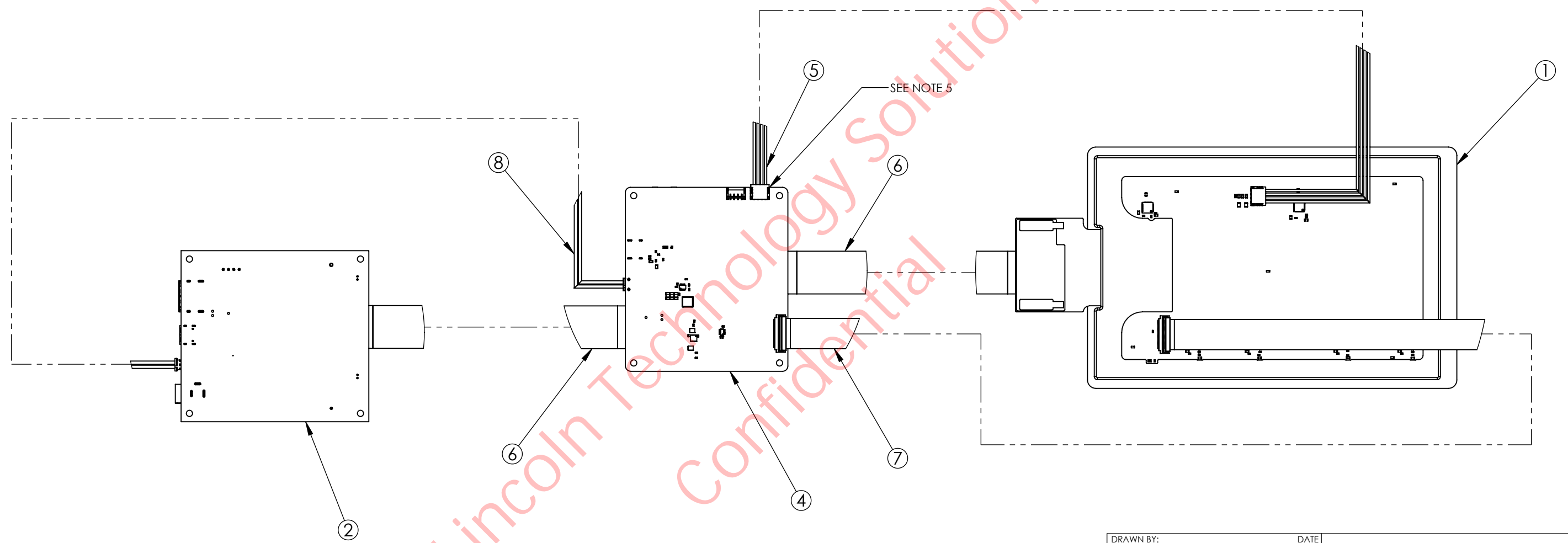
GENERAL TOLERANCE TABLE(±MM)	
L ≤ 20	0.1
20 < L ≤ 50	0.2
50 < L ≤ 100	0.25
100 < L ≤ 200	0.3
L > 200	0.5
SCALE: 1:2	SHEET 1 OF 2
DO NOT SCALE DRAWING	

MATERIAL: N/A	DESCRIPTION KIT FOR LCD281			
FINISH: N/A				
COMMENTS: ALL DIMENSIONS ARE IN MILLIMETERS	<table border="1"> <tr> <td>PART NO. LCDK281CTL1ARH01</td> <td>HW REV. 1.0</td> <td>DRW REV. B</td> </tr> </table>	PART NO. LCDK281CTL1ARH01	HW REV. 1.0	DRW REV. B
PART NO. LCDK281CTL1ARH01	HW REV. 1.0	DRW REV. B		

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINCOLN TECHNOLOGY SOLUTIONS (LTS) AND SHALL NOT BE REDISTRIBUTED. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF LTS IS PROHIBITED.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	LCD281-070CTL1ARNTT	7IN LIGHT-ON-BOARD MULTIPLEXING FALD LCD	1
2	PCB-L0089	CARRIER PCB	1
3	PCB-L0074	SODIMM PCB	1
4	PCB-L0170	FALD DRIVER	1
5	11613	BACKLIGHT POWER CABLE	1
6	151660429	40 PIN FFC, 3IN	2
7	PCB-L0016	BACKLIGHT FPC	1
8	11610	2 PIN POWER JUMPER	1
9	2ABLO24F	POWER SUPPLY 12V/2A	1

KIT BOTTOM VIEW



NOTE:
5. WHEN CONNECTING ITEM 5, THE CONNECTOR S301 MUST BE USED ON THE FALD DRIVER PCB-L0170, AS SHOWN.

DRAWN BY: KF	DATE 6/27/2025
CHECKED BY: JH	DATE 6/27/2025



GENERAL TOLERANCE TABLE(±MM)	
L ≤ 20	0.1
20 < L ≤ 50	0.2
50 < L ≤ 100	0.25
100 < L ≤ 200	0.3
L > 200	0.5
SCALE: 1:2	SHEET 2 OF 2
DO NOT SCALE DRAWING	

MATERIAL:
N/A

FINISH:
N/A

COMMENTS:
ALL DIMENSIONS ARE IN MILLIMETERS

DESCRIPTION KIT FOR LCD281		
PART NO. LCDK281CTL1ARH01	HW REV. 1.0	DRW REV. B
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