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LCDK185CTL1ART02 &

LCDK185NTL1NCT02

LCD185 with Adapter for TI SK-AM62 Starter Kit

111 Corning Road, Suite 116 • Cary, NC 27518

Approvals	
Model Number	LCDK185CTL1ART02 LCDK185NTL1NCT02
Datasheet Revision	2.0
Drawing Revision	E

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Customer Approval
Approved by: _____ Date: _____

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Table of Contents

Revision History 5
Document Revision 5
Hardware Revision 6
Product Overview 7
Ordering Information 8
Pictorial 9
PCB-L0136 9
PCB-L0152 10
Required Connections 12
LCD 12
Power 12
TI SK-AM62 Starter Kit 12
Specifications 13
Optical and Mechanical (LCD185 + PCB-L0136 + PCB-L0152) 13
Environmental 13
Connector Summary 14
Connector Pinouts (PCB-L0136) 15
To PCB-L0152 (S200) 15
Touch I2C (S300) 17
Backlight (S301, S302) 17
LCD185 (S303) 18
USB-C Power (S400) 20
EEPROM (S401) 21
Connector Pinouts (PCB-L0152) 21
To PCB-L0136 (S100) 21
To TI Starter Kit (S101) 23
Electrical – Absolute Maximum 25
Electrical – Typical 26
Power-Up 27
TI Starter Kit 27
BeaglePlay or Phytec PhyCore platforms 28
Interfaces 29
I2C 29

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LVDS 30
Bring-Up Support 31
Appendix 1: Mechanical Drawing 32

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Revision History

Document Revision

Date	Version #	Description	Created By	Checked By	Quality Approved By	Approved By
9.28.2022	1.0	Initial release	DA	KB	--	JH
9.30.2022	1.1	Updated schematics R303 is now 100K	ZH	JH	--	JH
2.17.2023	1.2	Updated mechanical drawing, updated ordering information table, removed PCB schematics, updated PCB pictorials, PCB-L0136R1.2 was PCB-L0136R1.1, PCB-L0152R1.1 was PCB-L0152R1.0	LH	DA	--	JH
3.27.2023	1.3	Updated USB-C Charger to USB-A, and updated the part number to a 5V 2A part	ZH	DA	--	JH
3.11.2025	1.4	Updated drawing, added Quality Approved By Column to Document Revision table, added a quantity column to the Ordering Information table	ST	LH	TT	JH
6.27.2025	1.5	Corrected Environmental operating and storage temperatures	ST	LH	TT	JH
7.25.2025	2.0	Updated drawing, updated Hardware Revision from 1.2 to 2.0, updated Ordering Information table: LCDK185CTL1ART02R1.2 to R2.0, LCD185-101CTL1ARNTTR1.2 to R2.0, LCDK185NTL1NCT02R1.0 to R2.0, LCD185-101NTL1NCNTTR1.0 to R2.0, USB-A Charger part number from AQ10A-050BP-H to 11719, added positive/negative to Connector Pin Out to PCB-L0152 table description, added even/odd and positive/negative to Pin Out LCD185 table description	ST	KV	TT	JH

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Hardware Revision

Date	Version #	Description
9.28.2022	1.0	Initial Release
2.17.2023	1.1	Added PCB stacking hardware
3.27.2023	1.2	Charger part number AQ10A-050BP-H was VEL05US050-US-BB
7.24.2025	2.0	Updated LCD module revision level. Updated USB-A Charger part number.

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Product Overview

This LCD kit supports connecting LTS LCD185 to the TI SK-AM62 starter kit. These 2 platforms may also be referred to as AM62x platforms. This kit predominantly consists of LCD185, PCB-L0136, and PCB-L0152.

LCD185 is a high-brightness, high-resolution (WUXGA) 10.1" LCD that requires the following 3 connections.

- LVDS (45-pin flex)
- Touch Screen (8-pin flex)
- Backlight (cabled 2-pin connectors)

PCB-L0136 and PCB-L0152 converts the 2 flex connections to the single 40-pin flex used on the TI SK-AM62 starter kit. PCB-L0136 also provides the LCD185 backlight driver which the starter kit can control over the same 40-pin flex. Finally, PCB-L0136 supports a USB Type C connector to be powered from commodity USB chargers. Since these chargers can support various maximum currents, PCB-L0136 has a rotary switch to adjust the maximum backlight power.

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Ordering Information

This document refers to parts listed below either by part number or name indicated in the following table. Part revisions are only specifically indicated in this table and may be excluded in other sections of this document.

LTS Part #	QTY	Parts in Kit	Description
LCDK185CTL1ART02R2.0	1	PCB-L0136R1.2	AM62x_SOC to LCD185 Adapter Board
	1	PCB-L0152R1.1	TI Starter Kit Adapter Board
	1	LCD185-101CTL1ARNTTR2.0	10.1" HBWG Cap Touch
	1	0151661165	LCD Flex (2" 0.5mm pitch 45 POS FFC cable)
	2	0151660431	AM62x Flex (4" 0.5mm pitch 40 POS FFC cable)
	1	11719	USB-A Charger
	1	DH-20M50052	USB-A to USB-C cable
	4	A14040700UX0339	M3 X 9 mm + 4 mm Hex Standoff
	4	93640A125	M3 x 6 mm Nylon Socket Head Screw
LCDK185NTL1NCT02R2.0	1	PCB-L0136R1.2	AM62x_SOC to LCD185 Adapter Board
	1	PCB-L0152R1.1	TI Starter Kit Adapter Board
	1	LCD185-101NTL1NCNTTR2.0	10.1" HBWG No Touch with CG
	1	0151661165	LCD Flex (2" 0.5mm pitch 45 POS FFC cable)
	2	0151660431	AM62x Flex (4" 0.5mm pitch 40 POS FFC cable)
	1	11719	USB-A Charger
	1	DH-20M50052	USB-A to USB-C cable
	4	A14040700UX0339	M3 X 9 mm + 4 mm Hex Standoff
	4	93640A125	M3 x 6 mm Nylon Socket Head Screw

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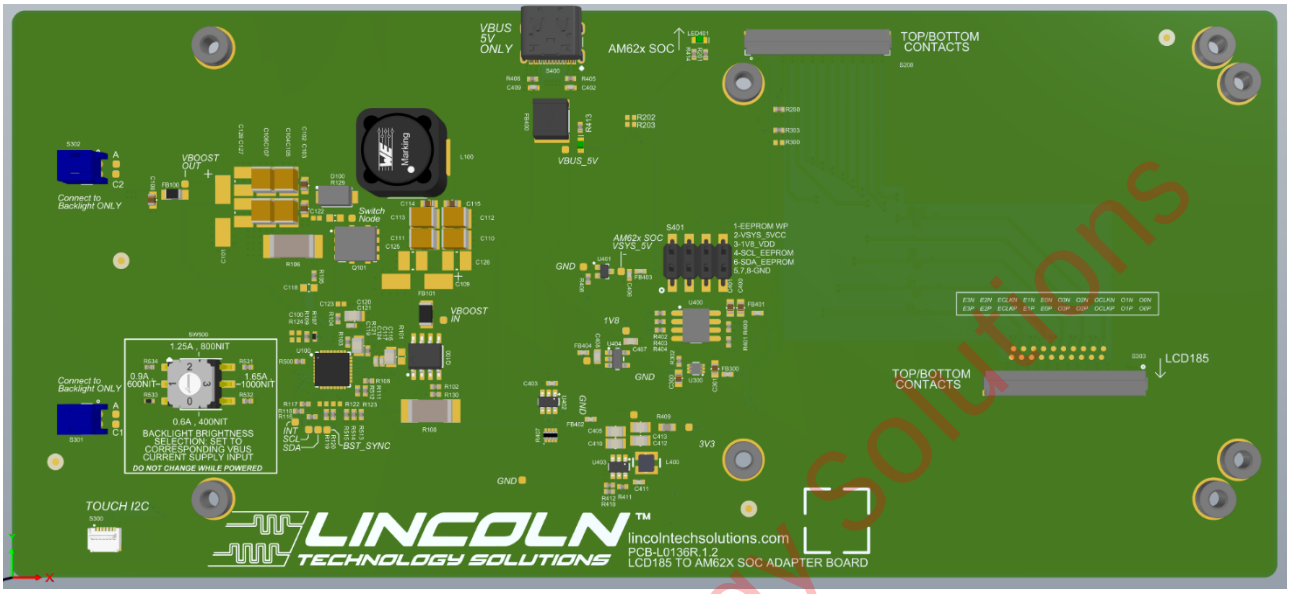
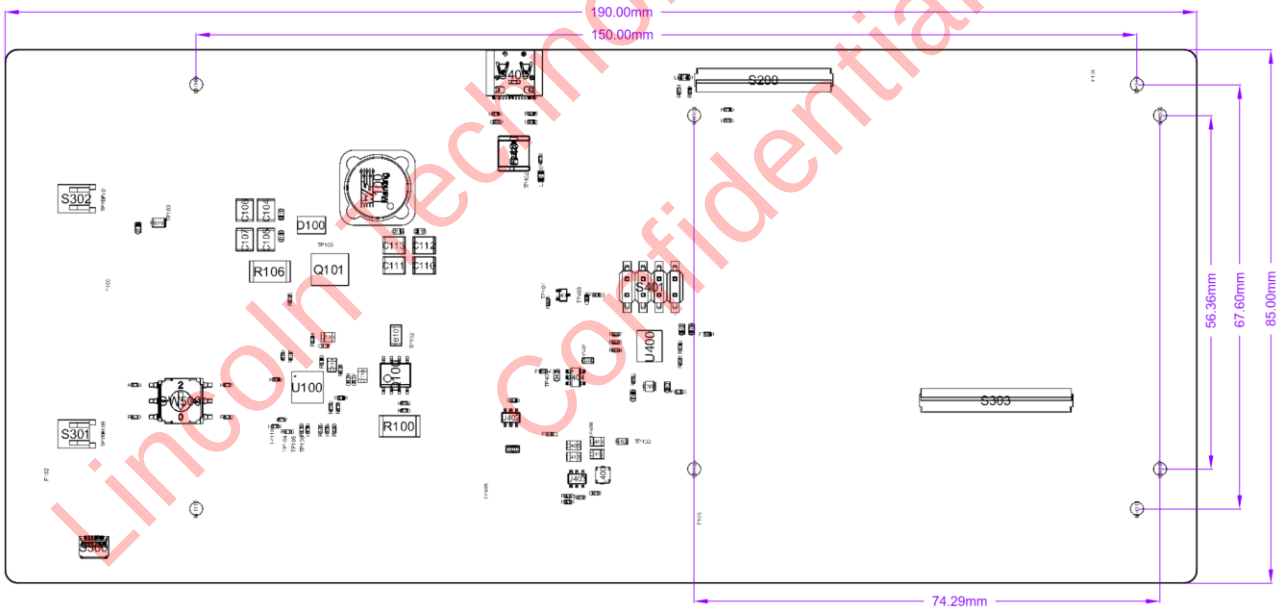
Pictorial

PCB-L0136

The following shows a 3D rendering as well as a dimensioned mechanical drawing.





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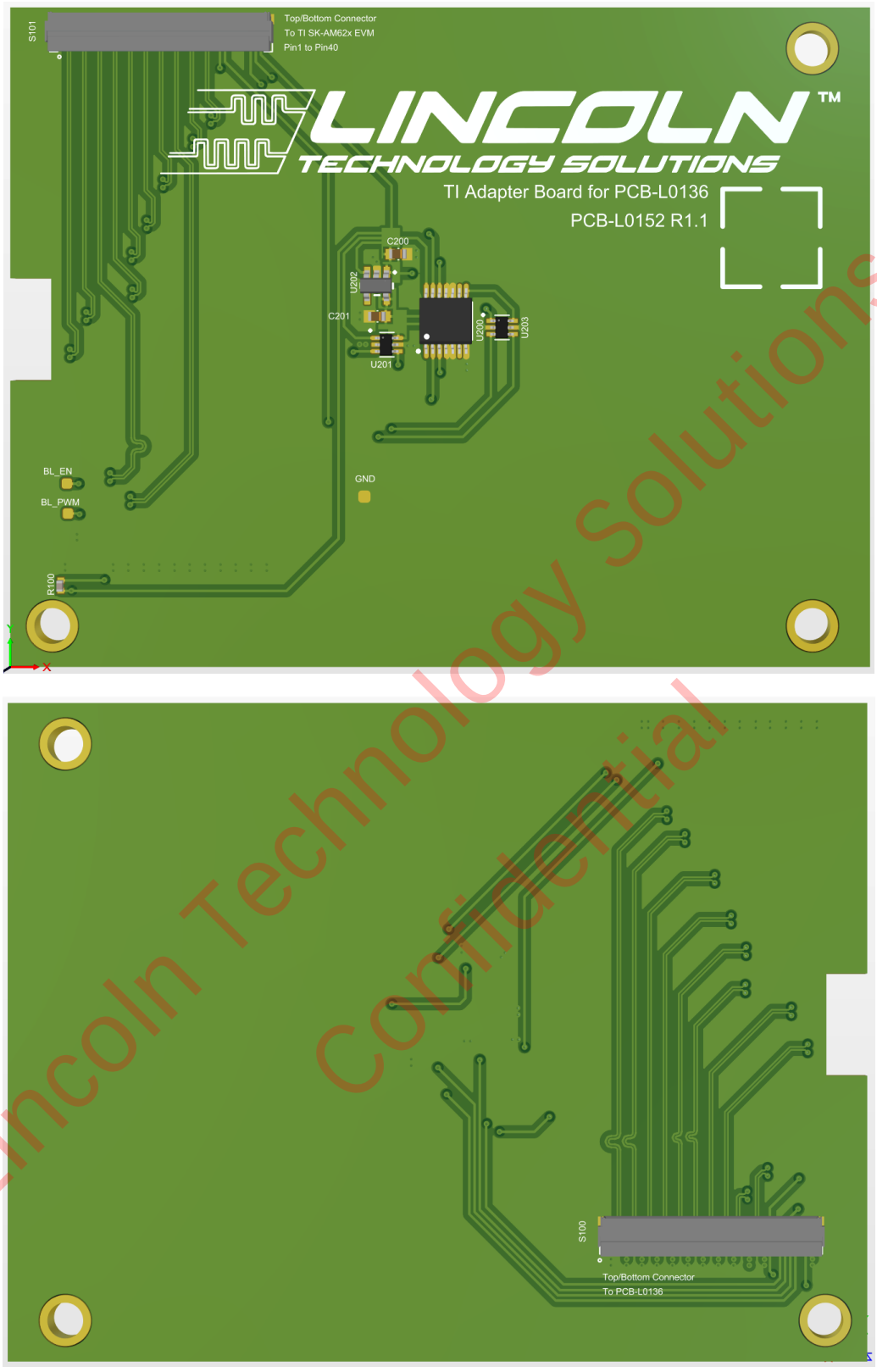
PCB-L0152



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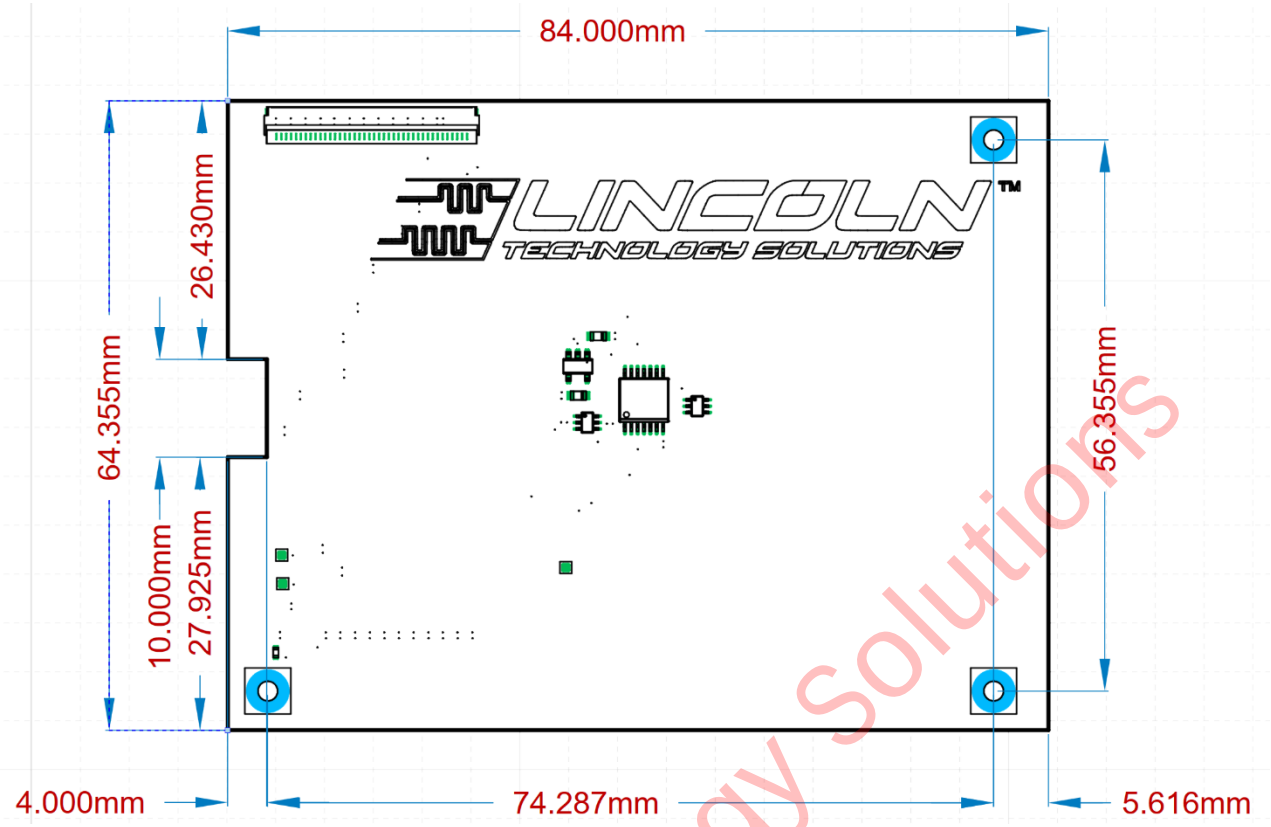

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Required Connections

PCB-L0136 requires the following 3 “types” of connections.

NOTE: Full details on the connectors is provided in Connector Summary and Connector Pinouts.

LCD

PCB-L0136 should be positioned so that the Touch I2C and LCD185 connectors are aligned with the corresponding flex and connector on LCD185.

- The Touch I2C connector supports the Touch flex on LCD185.
- The LCD185 connector supports the flex connector on LCD185 using the LCD Flex.
- The Backlight connectors support the cabled backlight connectors on LCD185.

Power

The VBUS connector supports a standard USB-C cable from a USB charger or power bank.

TI SK-AM62 Starter Kit

The 40-pin FFC connector on PCB-L0136 supports the flex connector on the TI SK-AM62 Starter Kit through the adapter board, PCB-L0152. The 40-pin FFC connectors on both PCB-L0136 and PCB-L0152 have both top and bottom contacts to maximize flex orientation support. A flex cable sample and part number are provided, but the required flex will be defined by the final orientation of the TI SK-AM62 Starter Kit relative to PCB-L0152. At a minimum it must support 40 pins and 0.5mm pitch.

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Specifications

Optical and Mechanical (LCD185 + PCB-L0136 + PCB-L0152)

Item	Specification	Unit
Active Area	216.8x135.5	mm
Backlight Type	Edge lit	-
LCD Size (diagonal)	10.1	inches
Outline Dimensions (typ)[1]	228 x 154 (LCD185) Thickness: 26 (with stacked PCB configuration)	mm
Resolution	1920 x 1200	pixels

(1) The outline dimensions do not include any AM62x platform or associated cabling.

Environmental

Item	Symbol	Value	Unit
Operating Temperature	T_{OPR}	-20 to 70	°C
Storage Temperature	T_{STG}	-30 to 80	°C

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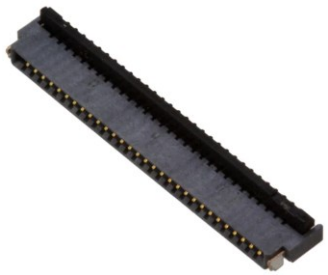
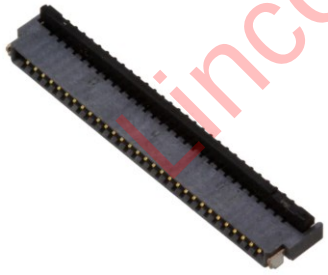
Connector Summary

Connector Type	MPN	Description
AM62x SOC (PCB L0136 S200, PCBL0152 S100 & S101) 	FH34SRJ-40S-0.5SH(50)	40 positions 0.5mm pitch Connector between PCB-L0136 and PCB-L0152. Connector to TI Starter Kit.
Touch I2C (S300)	5034800600	6 positions 0.5mm pitch Connector to Touch I2C
Backlight (S301, S302)	S2B-ZR(LF)(SN)	Connector to LCD backlight 2 positions 1.5mm pitch
LCD185 (S303) 	FH34SRJ-45S-0.5SH(50)	45 positions 0.5mm pitch Connector to LCD185

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USB-C (S400) 	TYPE-C-31-M-12	16 positions 5V Power
EEPROM (S401) 	TSM-104-01-L-DV	8 positions 2.54mm pitch Optional connector for EEPROM programming.

Connector Pinouts (PCB-L0136)

To PCB-L0152 (S200)

Number	Pin Name	I/O	Description
1	GND	P	Ground
2	VSYS	I	TI Starter Kit power-up indicator
3	GND	P	Ground
4	TP_SCL_1V8	I	Touch Panel and EEPROM I2C Clock
5	TP_SDA_1V8	I/O	Touch Panel and EEPROM I2C Data
6	TP_INT_1V8	O	Touch Panel Interrupt
7	MSTR_RST_3V3	I	Reset
8	BL_PWM_3V3	I	Pulse Width Modulation Back light brightness control
9	BL_EN_3V3	I	Backlight Enable

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10	GND	P	Ground
11	OLDI0_CLK1N	I	LVDS Clock Pin Negative
12	OLDI0_CLK1P	I	LVDS Clock Pin Positive
13	GND	P	Ground
14	OLDI0_CLK0N	I	LVDS Clock Pin Negative
15	OLDI0_CLK0P	I	LVDS Clock Pin Positive
16	GND	P	Ground
17	OLDI0_A7N	I	LVDS Data Pin Negative
18	OLDI0_A7P	I	LVDS Data Pin Positive
19	GND	P	Ground
20	OLDI0_A6N	I	LVDS Data Pin Negative
21	OLDI0_A6P	I	LVDS Data Pin Positive
22	GND	P	Ground
23	OLDI0_A5N	I	LVDS Data Pin Negative
24	OLDI0_A5P	I	LVDS Data Pin Positive
25	GND	P	Ground
26	OLDI0_A4N	I	LVDS Data Pin Negative
27	OLDI0_A4P	I	LVDS Data Pin Positive
28	GND	P	Ground
29	OLDI0_A3N	I	LVDS Data Pin Negative
30	OLDI0_A3P	I	LVDS Data Pin Positive
31	GND	P	Ground
32	OLDI0_A2N	I	LVDS Data Pin Negative
33	OLDI0_A2P	I	LVDS Data Pin Positive

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34	GND	P	Ground
35	OLDI0_A1N	I	LVDS Data Pin Negative
36	OLDI0_A1P	I	LVDS Data Pin Positive
37	GND	P	Ground
38	OLDI0_A0N	I	LVDS Data Pin Negative
39	OLDI0_A0P	I	LVDS Data Pin Positive
40	GND	P	Ground

Touch I2C (S300)

Number	Pin Name	I/O	Description
1	GND	P	Ground
2	TP_SDA_1V8	I/O	Touch Panel I2C Data
3	TP_SCL_1V8	O	Touch Panel I2C Clock
4	TP_INT_1V8	O	Touch Panel Interrupt
5	TP_RST_1V8	I	Touch Panel Reset
6	VDD	P	Touch Panel Power

Backlight (S301, S302)

Number	Pin Name Name	I/O	Description
1	V_{BL_A}	P	Backlight Anode
2	V_{BL_C}	P	Backlight Cathode

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LCD185 (S303)

Number	Pin Name	I/O	Description
1	VDD	P	LCD185 Power
2	VDD	P	LCD185 Power
3	VDD	P	LCD185 Power
4	VDD	P	LCD185 Power
5	VDD	P	LCD185 Power
6	NC	-	No Connection
7	NC	-	No Connection
8	NC	-	No Connection
9	NC	-	No Connection
10	GND	P	Ground
11	O_LVDS_0_N	O	LVDS Odd Channel Negative, Pair 0
12	O_LVDS_0_P	O	LVDS Odd Channel Positive, Pair 0
13	GND	P	Ground
14	O_LVDS_1_N	O	LVDS Odd Channel Negative, Pair 1
15	O_LVDS_1_P	O	LVDS Odd Channel Positive, Pair 1
16	GND	P	Ground
17	O_LVDS_CLK_N	O	LVDS Odd Channel Negative, Clock
18	O_LVDS_CLK_P	O	LVDS Odd Channel Positive, Clock
19	GND	P	Ground
20	O_LVDS_2_N	O	LVDS Odd Channel Negative, Pair 2
21	O_LVDS_2_P	O	LVDS Odd Channel Positive, Pair 2
22	GND	P	Ground

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23	O_LVDS_3_N	O	LVDS Odd Channel Negative, Pair 3
24	O_LVDS_3_P	O	LVDS Odd Channel Positive, Pair 3
25	GND	P	Ground
26	E_LVDS_0_N	O	LVDS Even Channel Negative, Pair 0
27	E_LVDS_0_P	O	LVDS Even Channel Positive, Pair 0
28	GND	P	Ground
29	E_LVDS_1_N	O	LVDS Even Channel Negative, Pair 1
30	E_LVDS_1_P	O	LVDS Even Channel Positive, Pair 1
31	GND	P	Ground
32	E_LVDS_CLK_N	O	LVDS Even Channel Negative, Clock
33	E_LVDS_CLK_P	O	LVDS Even Channel Positive, Clock
34	GND	P	Ground
35	E_LVDS_2_N	O	LVDS Even Channel Negative, Pair 2
36	E_LVDS_2_P	O	LVDS Even Channel Positive, Pair 2
37	GND	P	Ground
38	E_LVDS_3_N	O	LVDS Even Channel Negative, Pair 3
39	E_LVDS_3_P	O	LVDS Even Channel Positive, Pair 3
40	GND	P	Ground
41	NC	-	No Connection
42	NC	-	No Connection
43	NC	-	No Connection
44	NC	-	No Connection
45	NC	-	No Connection

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USB-C Power (S400)

Pin	Name	I/O	Description
A1 / B12	GND	P	Ground
A2 / B11	NC	-	No Connection
A3 / B10	NC	-	No Connection
A4 / B9	VBUS	P	Input from USB Charger or Power Bank
A5 / B8	NC	-	No Connection
A6 / B7	NC	-	No Connection
A7 / B6	NC	-	No Connection
A8 / B5	NC	-	No Connection
A9 / B4	VBUS	P	5V VBUS
A10 / B3	NC	-	No Connection
A11 / B2	NC	-	No Connection
A12 / B1	GND	P	Ground

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EEPROM (S401)

This connector is provided to program an on-board EEPROM. This can be used for Linux to identify PCB-L0136, if required by the end customer.

Pin	Name	I/O	Description
1	EE_WP	I	EEPROM Write Protect
2	VSYS	O	TI Starter Kit Power-Up Indicator
3	EE_VIO	O	EEPROM I/O Voltage Reference (1.8V)
4	EE_SCL	I	EEPROM I2C Clock
5	GND	P	Ground
6	EE_SDA	I/O	EEPROM I2C Data
7	GND	P	Ground
8	GND	P	Ground

Connector Pinouts (PCB-L0152)

To PCB-L0136 (S100)

Number	Pin Name	I/O	Description
1	GND	P	Ground
2	O_LVDS_0_P	O	LVDS Data
3	O_LVDS_0_N	O	LVDS Data
4	GND	P	Ground
5	O_LVDS_1_P	O	LVDS Odd Data Positive
6	O_LVDS_1_N	O	LVDS Odd Data Negative
7	GND	P	Ground
8	O_LVDS_2_P	O	LVDS Data

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9	O_LVDS_2_N	O	LVDS Data
10	GND	P	Ground
11	O_LVDS_3_P	O	LVDS Data
12	O_LVDS_3_N	O	LVDS Data
13	GND	P	Ground
14	E_LVDS_0_P	O	LVDS Data
15	E_LVDS_0_N	O	LVDS Data
16	GND	P	Ground
17	E_LVDS_1_P	O	LVDS Data
18	E_LVDS_1_N	O	LVDS Data
19	GND	P	Ground
20	E_LVDS_2_P	O	LVDS Data
21	E_LVDS_2_N	O	LVDS Data
22	GND	P	Ground
23	E_LVDS_3_P	O	LVDS Data
24	E_LVDS_3_N	O	LVDS Data
25	GND	P	Ground
26	O_LVDS_CLK_P	O	LVDS Clock
27	O_LVDS_CLK_N	O	LVDS Clock
28	GND	P	Ground
29	E_LVDS_CLK_P	O	LVDS Clock
30	E_LVDS_CLK_N	O	LVDS Clock
31	GND	P	Ground
32	BL_EN_3V3	O	Backlight Enable (To test point for debug)

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33	BL_PWM_3V3	O	Backlight PWM (To test point for debug)
34	TP_RST_3V3	O	Touch Panel Reset
35	TP_INT_1V8	I	Touch Panel Interrupt
36	SDA_TP_1V8	I/O	Touch Panel & EEPROM I2C Data
37	SCL_TP_1V8	O	Touch Panel & EEPROM I2C Touch
38	GND	P	Ground
39	VCC_3v3_SYS	O	Power enable pin for PCB-L0136
40	GND	P	Ground

To TI Starter Kit (S101)

Number	Pin Name	I/O	Description
1	GND	P	Ground
2	E_LVDS_3_P	I	LVDS Data
3	E_LVDS_3_N	I	LVDS Data
4	GND	P	Ground
5	E_LVDS_2_P	I	LVDS Data
6	E_LVDS_2_N	I	LVDS Data
7	GND	P	Ground
8	E_LVDS_CLK_P	I	LVDS Clock
9	E_LVDS_CLK_N	I	LVDS Clock
10	GND	P	Ground
11	E_LVDS_1_P	I	LVDS Data
12	E_LVDS_1_N	I	LVDS Data
13	GND	P	Ground

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14	E_LVDS_0_P	I	LVDS Data
15	E_LVDS_0_N	I	LVDS Data
16	GND	P	Ground
17	O_LVDS_3_P	I	LVDS Data
18	O_LVDS_3_N	I	LVDS Data
19	GND	P	Ground
20	O_LVDS_2_P	I	LVDS Data
21	O_LVDS_2_N	I	LVDS Data
22	GND	P	Ground
23	O_LVDS_CLK_P	I	LVDS Clock
24	O_LVDS_CLK_N	I	LVDS Clock
25	GND	P	Ground
26	O_LVDS_1_P	I	LVDS Data
27	O_LVDS_1_N	I	LVDS Data
28	GND	P	Ground
29	O_LVDS_0_P	I	LVDS Data
30	O_LVDS_0_N	I	LVDS Data
31	GND	P	Ground
32	TP_INT_3V3	O	Touch Panel Interrupt
33	TP_RST_3V3	I	Touch Panel Reset
34	GND	P	Ground
35	GND	P	Ground
36	NC	-	No connection
37	NC	-	No connection

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38	SDA_TP_3V3	I/O	Touch Panel & EEPROM I2C Data
39	SCL_TP3V3	I	Touch Panel & EEPROM I2C Touch
40	VCC_3V3_SYS	I	Power enable pin for PCB-L0136

Electrical – Absolute Maximum

Item	Symbol	Value		Unit
		Min.	Max.	
Touch Panel and LCD185 Voltage	VDD	-0.3	3.47	V
PCB-L0136 Voltage	VBUS	-0.3	6.0	V
Power-Up Indicator Voltage	VSYS	-0.3	6.0	V
Backlight Voltage – Anode	V_{BL_A}	-0.3	50	V
Backlight Voltage – Cathode	V_{BL_C}	-0.3	50	V
Signal names ending in 3V3	V_{IO3V3}	-0.3	VDD+0.3	V
Signal names ending in 1V8	V_{IO1V8}	-0.3	2.0	V
All other signals (LVDS)	V_{IOLVDS}	-0.3	VDD+0.3	V

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Electrical – Typical

NOTE: Positive currents are ***into*** PCB-L0136 through PCB-L0152 except for VBUS which is to be provided directly to PCB-L0136.

NOTE: LVDS Differential Mode voltages are measured relative to the negative signal within each LVDS pair. All other voltages are measured relative to GND.

Item	Symbol	Min.	Typ.	Max.	Unit
Touch Panel and LCD185 Voltage	VDD	3.0		3.4	V
Touch Panel and LCD185 Current	I_{VDD}	-0.36		n/a	A
PCB-L0136 Voltage	VBUS	4.5		5.5	V
PCB-L0136 Current	I_{VBUS}	n/a		3.0	A
Power-Up Indicator Voltage	VSYS	3.23		5.5	V
Power-Up Indicator Current	I_{VSYS}	0		0.02	A
Backlight Voltage – Anode (100% PWM)	V_{BL_A}	25		30	V
Backlight Voltage – Cathode (100% PWM)	V_{BL_C}	0.7		5.4	V
Backlight PWM Frequency	$f_{BL_PWM_3V3}$	0.1		20	kHz
Backlight PWM ON Time	$t_{ON(BL_PWM_3V3)}$	0.22		n/a	us
Backlight Current (each connector)	I_{VBL_C}	0.04		0.2	A
Signal names ending in 3V3	V_{IL_3V3}	-0.3		0.4	V
	V_{IH_3V3}	2.0		VDD+0.3	V
Signal names ending in 1V8	V_{IL_1V8}	-0.3		0.5	V
	V_{IH_1V8}	1.5		2.0	V
	V_{OL_1V8}	0.0		0.25	V
	V_{OH_1V8}	1.4		1.9	V
All other signals (LVDS Common Mode)	V_{CM_LVDS}	1.0		1.4	V
All other signals (LVDS Differential Mode)	V_{IL_LVDS}	-0.3		-0.1	V
	V_{IH_LVDS}	0.1		0.3	V

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Power-Up

In preparation for power-up, the following electromechanical connections are required.

TI Starter Kit

1. Ideally PCB-L0136 is attached to the back of LCD185, allowing the following three connections to be consistently maintained with good mechanical stability. ***NOTE:*** The Backlight connectors are through-hole. To prevent any possible shorting of these connectors to the LCD185 metal housing, it is recommended that the through-hole pins be covered by tape that offers notable insulation. Additionally, it is recommended to use a double-sided tape (at least 1.0mm thick) to adhere PCB-L0136 to LCD185.
2. Touch I2C connector on PCB-L0136 is connected to LCD185 flex.
3. LCD185 connector on PCB-L0136 is connected to LCD185 using provided 45-pin FFC.
4. Backlight connectors on PCB-L0136 are connected to LCD185 cabled connectors.
5. S200 on PCB-L0136 is connected to S100 on PCB-L0152 using provided 40-pin FFC.
6. S101 on PCB-L0152 is connected to TI Starter Kit with the other provided 40-pin FFC. Also, it is required that the boot code ensures that ***neither*** MSTR_RST_3V3 or TP_INT_1V8 to PCB-L0136 is configured as Output-High during and immediately after boot. Configuring them as Input is preferred.

With those connections and boot code configuration, the following power-up sequence is recommended.

1. Apply VBUS to PCB-L0136 through PCB-L0152. Adjust SW500 if needed based on VBUS supply current rating.
2. Apply VSYS to PCB-L0136 through PCB-L0152 by applying power to the TI board and initiating the boot process.
3. After 10~50ms, TI board changes MSTR_RST_3V3 to Output-High and starts the LVDS interface.
4. After 200ms, TI board changes BL_EN_3V3 to Output-High.
5. TI board controls BL_PWM_3V3 as needed. Options are either static high (for full brightness) or PWM with required frequency and minimum on time (for dimming).

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BeaglePlay or Phytec PhyCore platforms

PCB-L0152 is not used for this connection.

1. Ideally PCB-L0136 is attached to the back of LCD185, allowing the following three connections to be consistently maintained with good mechanical stability. ***NOTE:*** The Backlight connectors are through-hole. To prevent any possible shorting of these connectors to the LCD185 metal housing, it is recommended that the through-hole pins be covered by tape that offers notable insulation. Additionally, it is recommended to use a double-sided tape (at least 1.0mm thick) to adhere PCB-L0136 to LCD185.
2. Touch I2C connector on PCB-L0136 is connected to LCD185 flex.
3. LCD185 connector on PCB-L0136 is connected to LCD185 using a flex.
4. Backlight connectors on PCB-L0136 are connected to LCD185 cabled connectors.
5. Beagle connector on PCB-L0136 is connected to the Beagle board using a flex.

Also, it is required that the Beagle boot code ensures that ***neither*** MSTR_RST_3V3 or TP_INT_1V8 to PCB-L0136 is configured as Output-High during and immediately after boot. Configuring them as Input is preferred.

With those connections and boot code configuration, the following power-up sequence is recommended.

1. Apply VBUS to PCB-L0136. Adjust SW500 if needed based on VBUS supply current rating.
2. Apply VSYS to PCB-L0136 by applying power to the Beagle board and initiating the boot process.
3. After 10~50ms, Beagle board changes MSTR_RST_3V3 to Output-High and starts the LVDS interface.
4. After 200ms, Beagle board changes BL_EN_3V3 to Output-High.
5. Beagle board controls BL_PWM_3V3 as needed. Options are either static high (for full brightness) or PWM with required frequency and minimum on time (for dimming).

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Interfaces

LCD185 requires the following two industry standard interfaces. Specific requirements are summarized in this section.

I2C

This interface is required to read touch panel data and read/write to a EEPROM. It supports the Fast-mode implementation of the I2C standard.

- I2C 8-bit slave address of the Touch Panel is 0xBA/0xBB.
- I2C 8-bit slave address of the EEPROM is 0xAE/0xAF.

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LVDS

This interface is required to send video data. The required timing parameters are summarized in the following table.

Item	Symbol	Min	Typ	Max	Unit
CLK Frequency	f_{CLK}	74.5	77.56	85	MHz
CLK Period	t_{CLK}	11.76	12.89	13.42	ns
Horizontal Display Area[1]	t_{HD}		960		t_{CLK}
HSYNC Period	t_H	989	1040	1248	t_{CLK}
Horizontal Blank	t_{HB}	29	80	288	t_{CLK}
HSYNC Pulse Width	t_{HP}	2	10	255	t_{CLK}
HSYNC Back Porch	t_{HBP}	3	6	255	t_{CLK}
HSYNC Front Porch	t_{HFP}	24	64	260	t_{CLK}
Vertical Display Area	t_{VD}		1200		t_H
VSYNC Period	t_V	1243	1243	1560	t_H
Vertical Blank	t_{VB}	43	43	360	t_H
VSYNC Pulse Width	t_{VP}	4	4	20	t_H
VSYNC Back Porch	t_{VBP}	20	20	255	t_H
VSYNC Front Porch	t_{VFP}	19	19	260	t_H
Refresh Frequency	$f_{REFRESH}$		60		Hz

(1) Two pixels are sent in parallel each t_{CLK} period. The number of active horizontal pixels is still 1920 as specified in optical characteristics, and all other Horizontal specs are double their listed values when counted as pixels.

Additionally, the LVDS interface uses the VESA (Format 2) RGB bit mapping, which is summarized in the following figure. This shows a single lane but LCD185 requires two lanes, which are identified as Odd (OLDI0_A0~3) and Even (OLDI0_A4~7).

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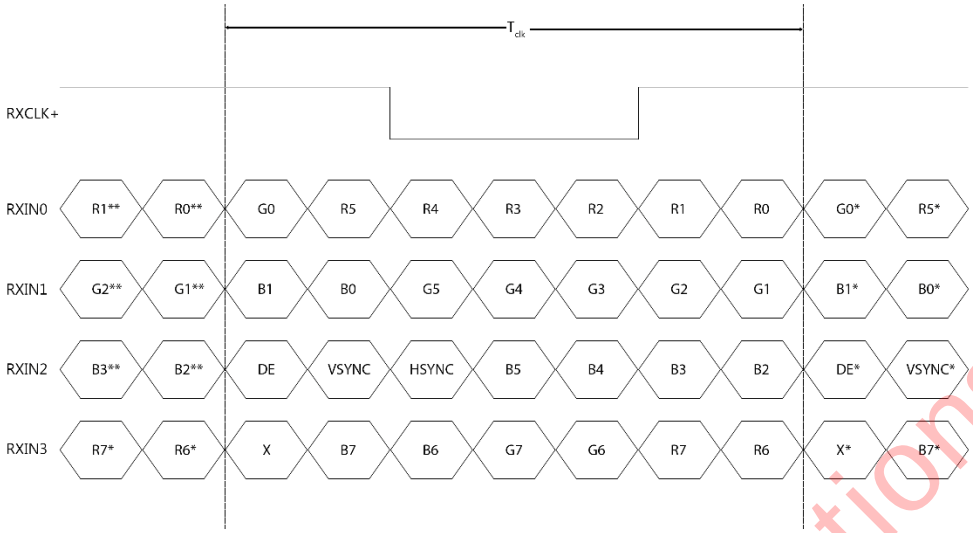

Bring-Up Support

To assist with any bring-up concerns, PCB-L0136 supports the following.

- LVDS signals are accessible using test points placed near the LCD185 connector.
- Input voltages (VBUS, VSYS) and generated voltages (VDD=3V3, 1V8) are accessible using test points. Nearby GND test points are also provided.
- Backlight boost signals (VBOOST_IN, VBOOST_OUT, Switch Node, etc.) are accessible using various test points.
- LCB-L0152 additionally has test points for Backlight Enable (BL_EN_3V3, TP101) and Backlight PWM (BL_PWM_3V3, TP100)

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Appendix 1: Mechanical Drawing

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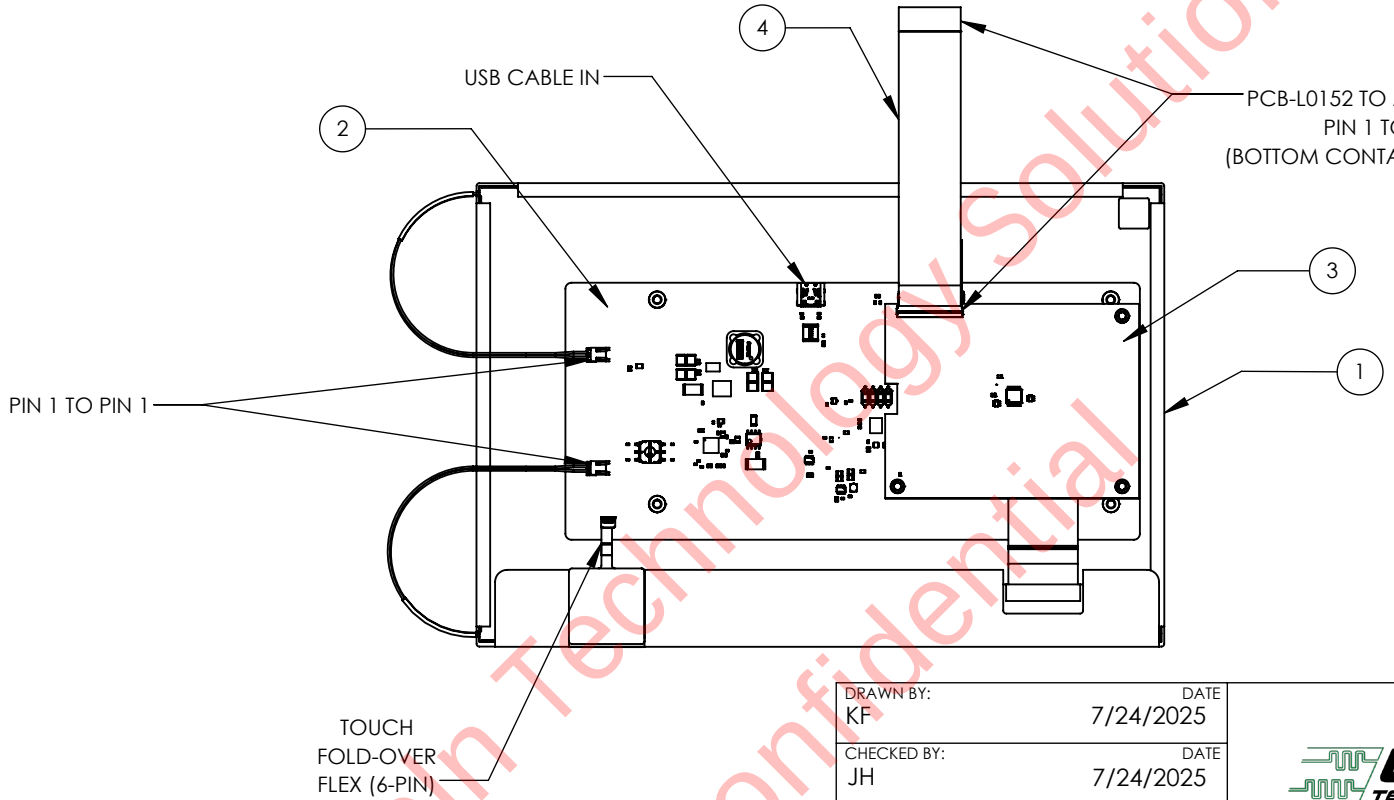
ITEM NO.	KIT NO.	PART NO.	DESCRIPTION	QTY.
1	LCDK185CTL1ART02	LCD185-101CTL1ARNTT	LCD185	1
	LCDK185NTL1NCT02	LCD185-101NTL1NCNTT		
2	ALL	PCB-L0136	DRIVER PCB	1
3	ALL	PCB-L0152	ADAPTER PCB	1
4	ALL	MFR P/N: 0151660431	4IN FLEX PIN 1 TO PIN 40	2
5	ALL	MFR P/N: 0151661165	2IN FLEX PIN 1 TO PIN 45	1
6	ALL	MFR P/N: A14040700UX0339	M3 X 9MM + 4MM HEX STAND-OFF	4
7	ALL	MFR P/N: 93640A125	M3 X 6MM NYLON SOCKET HEAD SCREW	4
8	ALL	11719	USB-A CHARGER	1
9	ALL	MFR P/N: DH-20M50052	USB-A TO USB-C CABLE	1

DRW REV.	HW REV.	DESCRIPTION	DATE	APPROVED
A	1.0	INITIAL ISSUE	9/27/2022	JH
B	1.1	ADDED PCB STACKING HARDWARE	2/17/2023	JH
C	1.2	CHANGED USB CHARGER BOM ITEM 8 (WAS VEL05US050-US-BB)	3/29/2023	JH
D	1.2	CORRECTED LCD PNS AND PICTORIAL	3/11/2025	JH
E	2.0	UPDATED LCD MODULE REVISION LEVEL. UPDATED ITEM 8 TO LTS PART NUMBER.	7/24/2025	JH



NOTE:
1. DRAWING IS VALID FOR KIT PART NUMBERS LCDK185CTL1ART02 AND LCDK185NTL1NCT02.
2. ITEM NUMBERS 8 AND 9 ARE PROVIDED WITH KIT BUT NOT DEPICTED IN DRAWING.

SCALE: 1:2.5	SHEET 1 OF 4
DO NOT SCALE DRAWING	

DRAWN BY: KF	DATE 7/24/2025
CHECKED BY: JH	DATE 7/24/2025
MATERIAL: N/A	
FINISH: N/A	
COMMENTS: ALL DIMENSIONS ARE IN MILLIMETERS.	

LINCOLN TECHNOLOGY SOLUTIONS™

DESCRIPTION: LCD185 WITH ADAPTER FOR TI SK-AM62 STARTER KIT

PART NO.	HW REV.	DRW REV.
SEE NOTE 1	2.0	E

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	LCDK185NTL1NCT02	LCD185-101NTL1NCNTT		
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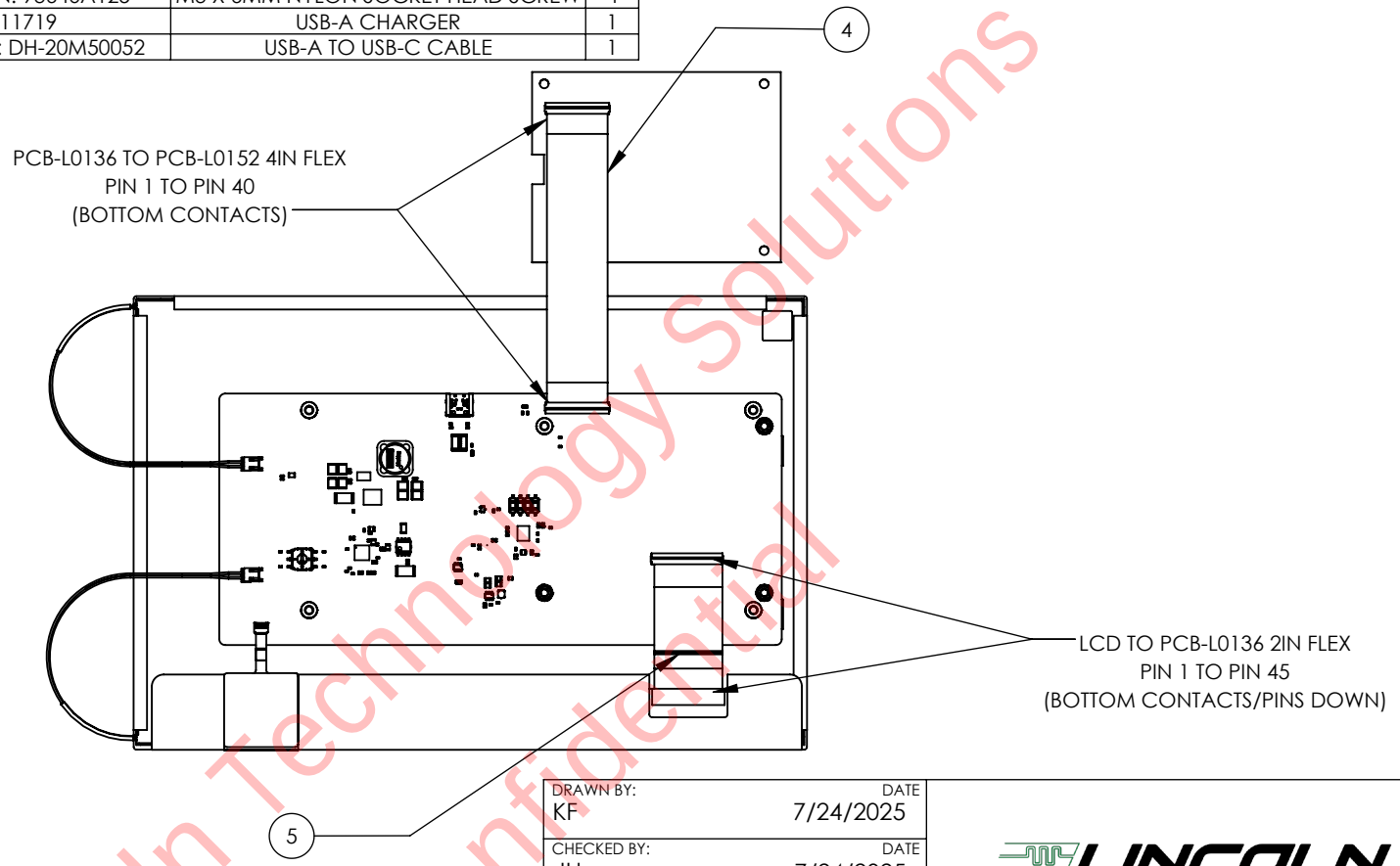
3	ALL	PCB-L0152	ADAPTER PCB	1
4	ALL	MFR P/N: 0151660431	4IN FLEX PIN 1 TO PIN 40	2
5	ALL	MFR P/N: 0151661165	2IN FLEX PIN 1 TO PIN 45	1
6	ALL	MFR P/N: A14040700UX0339	M3 X 9MM + 4MM HEX STAND-OFF	4
7	ALL	MFR P/N: 93640A125	M3 X 6MM NYLON SOCKET HEAD SCREW	4
8	ALL	11719	USB-A CHARGER	1
9	ALL	MFR P/N: DH-20M50052	USB-A TO USB-C CABLE	1



NOTE:
3. DRAWING VIEW DEPICTS PCB-L0136 TO PCB-L0152 CONNECTION PRIOR TO MOUNTING PCB-L0152 ONTO HEX STANDOFFS. ADDITIONAL 4IN FPC CONNECTING PCB-L0152 TO AM62X NOT SHOWN IN THIS VIEW.

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CHECKED BY: JH	DATE 7/24/2025
MATERIAL: N/A	
FINISH: N/A	
COMMENTS: ALL DIMENSIONS ARE IN MILLIMETERS.	

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DESCRIPTION: LCD185 WITH ADAPTER FOR TI SK-AM62 STARTER KIT

PART NO.	HW REV.	DRW REV.
SEE NOTE 1	2.0	E

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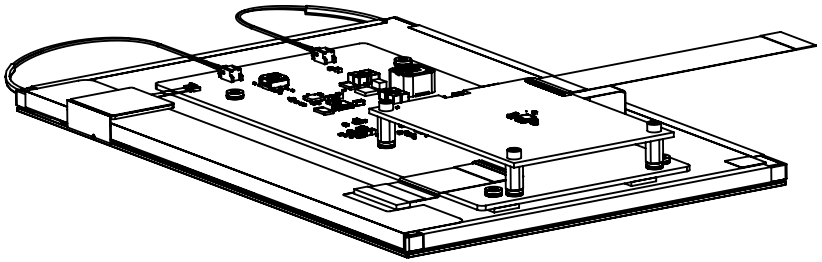
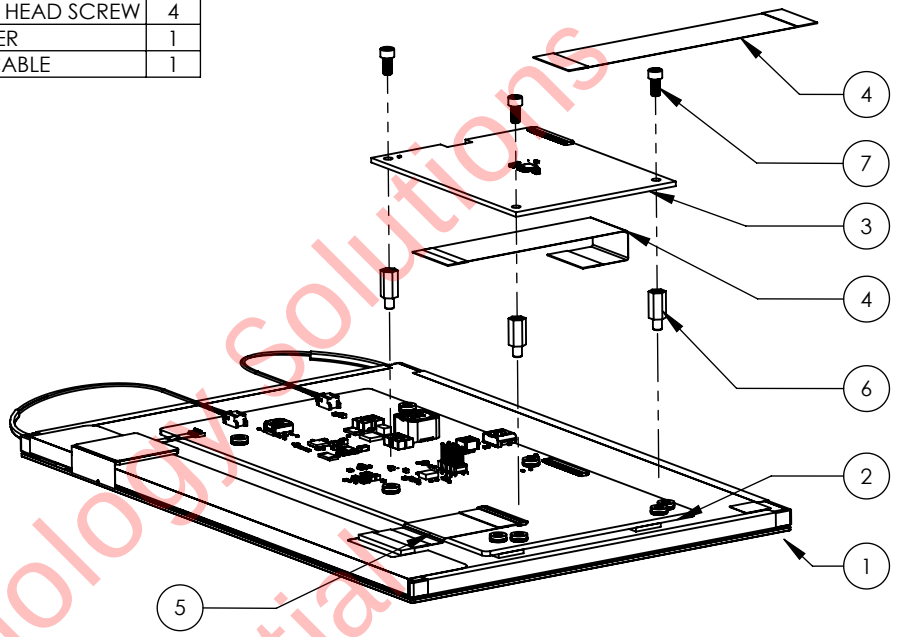
9	ALL	MFR P/N: DH-20M50052	USB-A TO USB-C CABLE	1



ASSEMBLED DETAIL VIEW



EXPLODED ASSEMBLY DETAIL VIEW

NOTE:
4. PCB-L0152 REQUIRES ONLY 3 STANDOFFS AND 3 SCREWS FOR MOUNTING.
5. MOUNTING PROVISIONS ARE NOT PROVIDED FOR TI SK-AM62.

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DRAWN BY: KF	DATE 7/24/2025
CHECKED BY: JH	DATE 7/24/2025
MATERIAL: N/A	
FINISH: N/A	
COMMENTS: ALL DIMENSIONS ARE IN MILLIMETERS.	

LINCOLN TECHNOLOGY SOLUTIONS™

DESCRIPTION: LCD185 WITH ADAPTER FOR TI SK-AM62 STARTER KIT

PART NO.	HW REV.	DRW REV.
SEE NOTE 1	2.0	E

SCALE: 1:2.5	SHEET 3 OF 4
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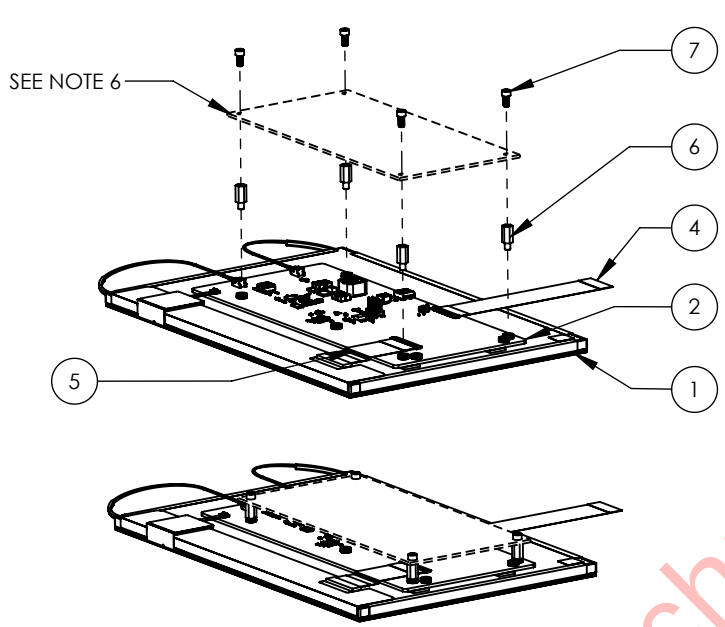
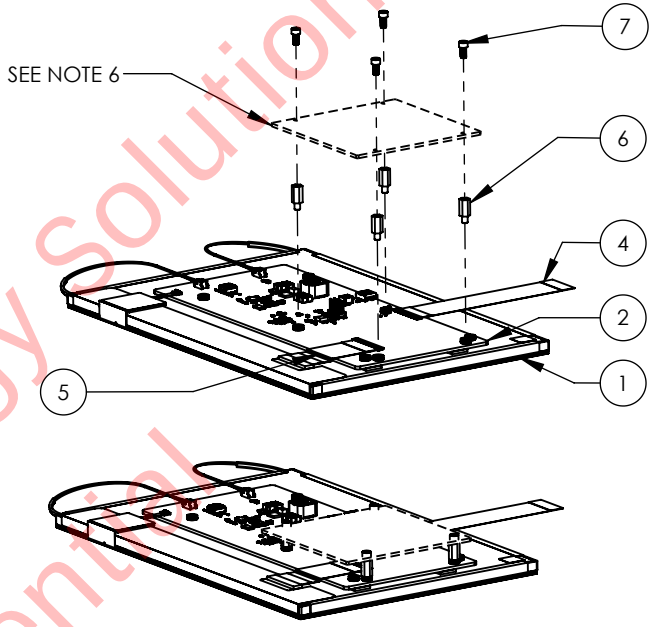


PHYTEC BOARD MOUNTING



BEAGLE BOARD MOUNTING

NOTE:
6. REFERENCE BOARD SHOWN FOR ILLUSTRATION PURPOSES ONLY. BOARD NOT INCLUDED IN KIT.
7. CONFIGURATIONS SHOWN DO NOT USE ADAPTER BOARD AND ONE OF THE 4IN FLEX CABLES.
8. PHYTEC AND BEAGLE BOARD MOUNTING OPTIONS USE ALL 4 STANDOFFS AND SCREWS.

SCALE: 1:4	SHEET 4 OF 4
DO NOT SCALE DRAWING	

DRAWN BY: KF	DATE 7/24/2025
CHECKED BY: JH	DATE 7/24/2025
MATERIAL: N/A	
FINISH: N/A	
COMMENTS: ALL DIMENSIONS ARE IN MILLIMETERS.	

LINCOLN TECHNOLOGY SOLUTIONS™

DESCRIPTION: LCD185 WITH ADAPTER FOR TI SK-AM62 STARTER KIT

PART NO.	HW REV.	DRW REV.
SEE NOTE 1	2.0	E

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