

User's Guide

10.1 inch OLDI LCD



ABSTRACT

The 1920x1200 OLDI/LVDS LCD display accessory kit is an add-on accessory for the starter kit EVMs of AM62x processors ([SK-AM62](#), [SK-AM62B](#), [SK-AM62-LP](#), etc), to add touch and display functions for the evaluation of HMI, industrial PC and other use cases requiring display. The TFT LCD screen is a 10.1" display with WUXGA resolution (1920x1200) and supports 10 point capacitive touch.

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Trademarks

All trademarks are the property of their respective owners.

1 Revisions and Applicable EVM

Table 1-1. Revisions and Applicable EVM

Revision	Description	Applicable EVM
Rev A	Production version	<ol style="list-style-type: none"> SK-AM62 SK-AM62B SK-AM62B-P1 SK-AM62-LP SK-AM62P-LP

2 System Description

The SK-LCD1 kit consists of a 10.1 inch 1920x1200 pixels TFT LCD and an adapter board. The adapter board converts the 45 pin LCD interface connections to 40 pin interface compatible for Sitara MPU EVM OLDI connector. The adapter board also has a LED driver circuit to source the LCD backlight and a MCU to control the backlight enable and brightness of the LCD through push buttons.



Figure 2-1. LCD Top Side

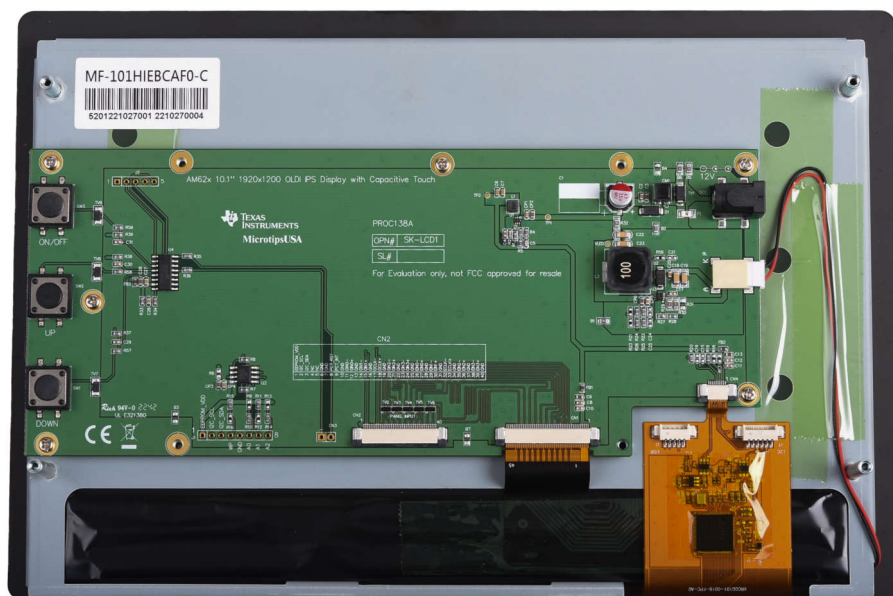


Figure 2-2. LCD Bottom Side

2.1 Functional Block Diagram

The SK-LCD1 functional block diagram is shown below. The LCD panel is interfaced to adapter board using CN1, CN4 and BL connectors in the adapter board. The EVM is interfaced to LCD kit using CN2 connector on the LCD adapter board.

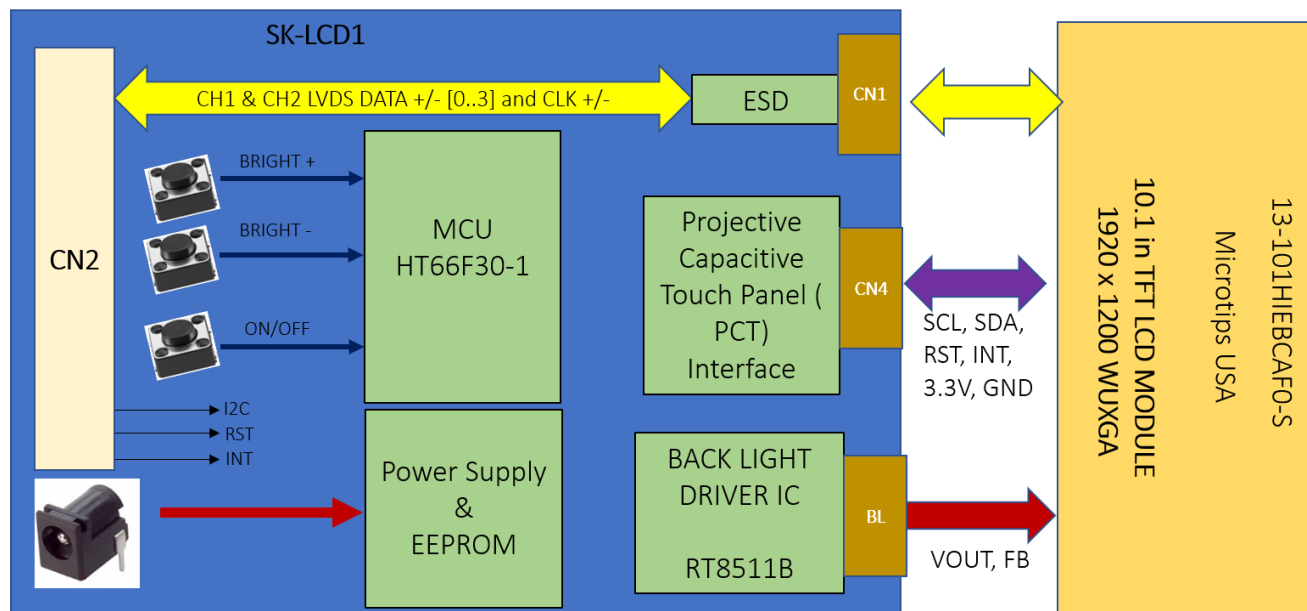


Figure 2-3. Functional Block Diagram

2.2 Power Block Diagram

The LCD is powered through external 12 V power adapter. There is a 3.3V buck converter on the adapter board to source the MCU, EEPROM, LCD module and touch screen.

The backlight driver on the adapter board provides the required voltage and current to the LCD backlight. The MCU controls the enable and brightness of the LCD.

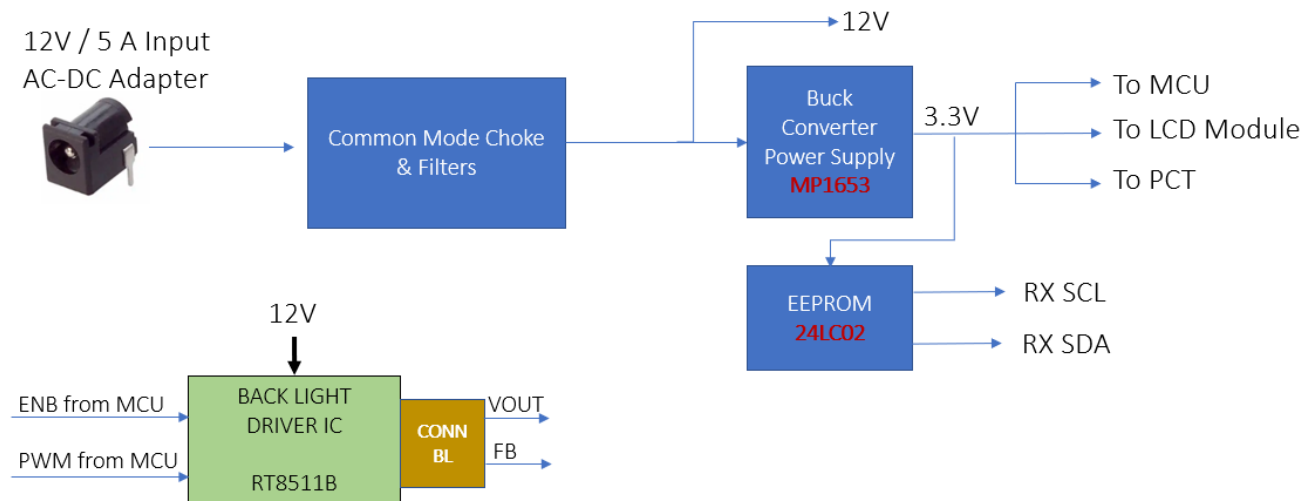


Figure 2-4. Power Block Diagram

2.3 LCD and EVM Connectivity

The LCD and EVM shall be interfaced using 40 pin opposite side contacts flat flex cable (MFR: Molex, PN: 152660436). The flat flex cable shall be connected to CN2 connector of the LCD and OLDI connector of the EVM (ref des varies in different EVM).

The EVM shall be assembled to the LCD kit using the standoff and fasteners provided in the box.

Note

Make sure that the pin 1 connection on same side of the cable.

TI recommends using 12 V external power adapter to power up the LCD **MFR: CUI, PN: SDI65-12-UD-P5**.

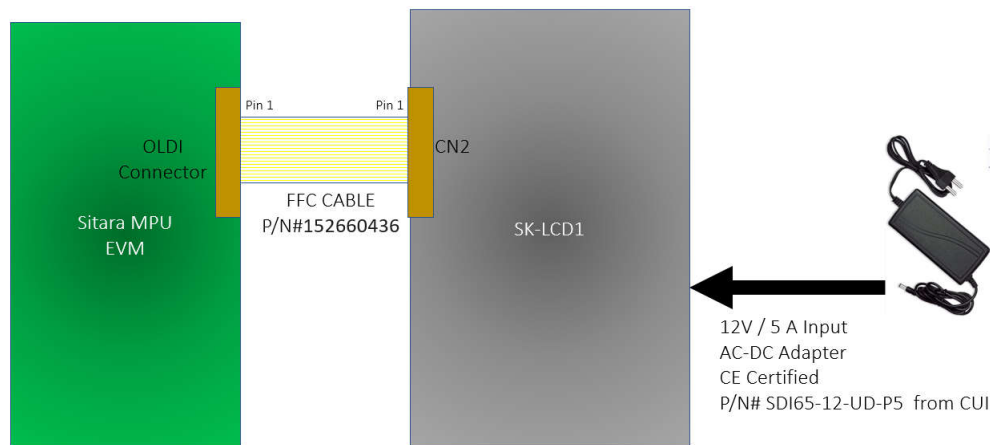


Figure 2-5. LCD and EVM Connection Diagram

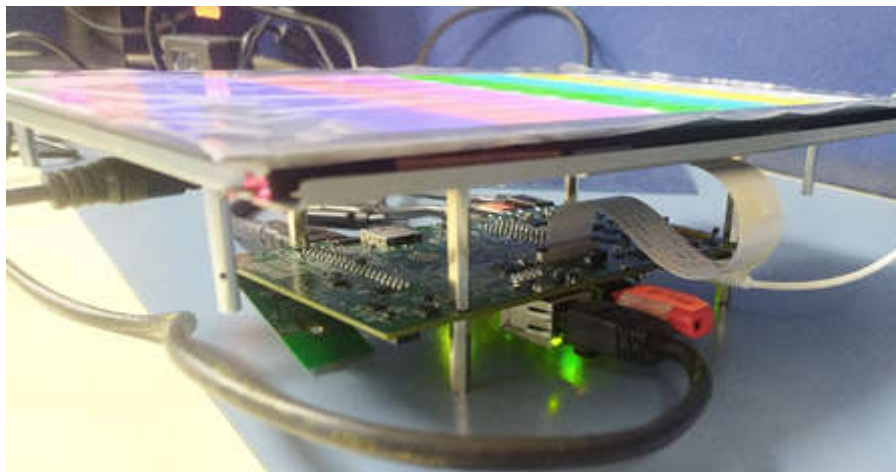


Figure 2-6. LCD and EVM Assembly

Table 2-1. LCD and EVM Connector Pinout

Pin Number	EVM OLDI Connector	LCD Connector
1	VCC_3V3_SYS	EEPROM_VDD
2	SOC_I2C0_SCL	I2C_SCL
3	SOC_I2C_SDA	I2C_SDA
4	NC	NC
5	NC	NC
6	GND	GND
7	GND	GND
8	OLDI_RESET_N	PCT_RST
9	TS_INT#	PCT_INT
10	GND	GND
11	CH1_LVDS_A0N	OIN0-
12	CH1_LVDS_A1P	OIN0+
13	GND	GND
14	CH1_LVDS_A1N	OIN1-
15	CH1_LVDS_A1P	OIN1+
16	GND	GND
17	CH1_LVDS_CLKN	OCLK-
18	CH1_LVDS_CLKP	OCLK+
19	GND	GND
20	CH1_LVDS_A2N	OIN2-
21	CH1_LVDS_A2P	OIN2+
22	GND	GND
23	CH1_LVDS_A3N	OIN3-
24	CH1_LVDS_A3P	OIN3+
25	GND	GND
26	CH2_LVDS_A0N	EIN0-
27	CH2_LVDS_A0P	EIN0+
28	GND	GND
29	CH2_LVDS_A1N	EIN1-
30	CH2_LVDS_A1P	EIN1+
31	GND	GND
32	CH2_LVDS_CLKN	ECLK-

Table 2-1. LCD and EVM Connector Pinout (continued)

Pin Number	EVM OLDI Connector	LCD Connector
33	CH2_LVDS_CLKP	ECLK+
34	GND	GND
35	CH2_LVDS_A2N	EIN2-
36	CH2_LVDS_A2P	EIN2+
37	GND	GND
38	CH2_LVDS_A3N	EIN3-
39	CH2_LVDS_A3P	EIN3+
40	GND	GND

2.4 EMC, EMI and ESD Compliance

Note

The maximum length of the IO cables shall not exceed 3 meters.

Components installed on the product are sensitive to Electro Static Discharge (ESD). TI recommends this product be used in an ESD controlled environment. This can include a temperature and/or humidity controlled environment to limit the buildup of ESD. TI also recommends to use ESD protection such as wrist straps and ESD mats when interfacing with the product.

The user is expected to take all precautions such as grounding himself using ESD wrist strap, wearing ESD coat and footwear. Lab is equipped with ESD safe mat as well as ESD safe testing tables.

The product is used in the basic electromagnetic environment as in laboratory conditions, and the applied standard is as per EN IEC 61326-1:2021.

3 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Revision * (October 2022) to Revision A (October 2023)	Page
• Added <i>EMC, EMI, and ESD Compliance</i> section.....	6

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User shall operate the Evaluation Kit within TI's recommended guidelines and any applicable legal or environmental requirements as well as reasonable and customary safeguards. Failure to set up and/or operate the Evaluation Kit within TI's recommended guidelines may result in personal injury or death or property damage. Proper set up entails following TI's instructions for electrical ratings of interface circuits such as input, output and electrical loads.

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3 Regulatory Notices:

3.1 United States

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FCC NOTICE: This kit is designed to allow product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and software developers to write software applications for use with the end product. This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of this chapter, the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under part 5 of this chapter.

3.1.2 For EVMs annotated as FCC – FEDERAL COMMUNICATIONS COMMISSION Part 15 Compliant:

CAUTION

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Interference Statement for Class A EVM devices

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Interference Statement for Class B EVM devices

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna.*
- *Increase the separation between the equipment and receiver.*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

3.2 Canada

3.2.1 For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210 or RSS-247

Concerning EVMs Including Radio Transmitters:

This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Concernant les EVMs avec appareils radio:

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Concerning EVMs Including Detachable Antennas:

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Concernant les EVMs avec antennes détachables

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

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3.3.1 *Notice for EVMs delivered in Japan:* Please see http://www.tij.co.jp/sds/ti_ja/general/eStore/notice_01.page 日本国内に輸入される評価用キット、ボードについては、次のところをご覧ください。

<https://www.ti.com/ja-jp/legal/notice-for-evaluation-kits-delivered-in-japan.html>

3.3.2 *Notice for Users of EVMs Considered "Radio Frequency Products" in Japan:* EVMs entering Japan may not be certified by TI as conforming to Technical Regulations of Radio Law of Japan.

If User uses EVMs in Japan, not certified to Technical Regulations of Radio Law of Japan, User is required to follow the instructions set forth by Radio Law of Japan, which includes, but is not limited to, the instructions below with respect to EVMs (which for the avoidance of doubt are stated strictly for convenience and should be verified by User):

1. Use EVMs in a shielded room or any other test facility as defined in the notification #173 issued by Ministry of Internal Affairs and Communications on March 28, 2006, based on Sub-section 1.1 of Article 6 of the Ministry's Rule for Enforcement of Radio Law of Japan,
2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
3. Use of EVMs only after User obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless User gives the same notice above to the transferee. Please note that if User does not follow the instructions above, User will be subject to penalties of Radio Law of Japan.

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4.2 User must read and apply the user guide and other available documentation provided by TI regarding the EVM prior to handling or using the EVM, including without limitation any warning or restriction notices. The notices contain important safety information related to, for example, temperatures and voltages.

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