Hardware Documentation

ADP-MIPI2LVDS1
for HW Revision 1.20

Version 004
(2021-07-26)

Elektronik Systeme

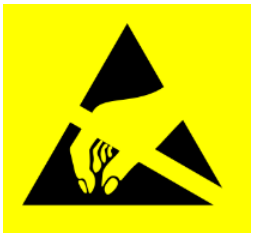
Untere Waldplätze 23
D-70569 Stuttgart
Phone: +49(0)711-123722-0
Fax: +49(0)711-123722-99

About This Document

This document describes how to use the ADP-MIPI2LVDS1 adapter board with mechanical and electrical information. The latest version of this document can be found at:

http://www.fs-net.de.

ESD Requirements



All F&S hardware products are ESD (electrostatic sensitive devices). All products are handled and packaged according to ESD guidelines. Please do not handle or store ESD-sensitive material in ESD-unsafe environments. Negligent handling will harm the product and warranty claims become void.

History

Date	V	Platform	A,M,R	Chapter	Description	Au
26.11.2019	000	All		-	Initial Version	MD
27.04.2020	001	All	A	2	Addition of the P/N numbers of connectors and mating parts	MD
04.05.2020	002	All	M	5	Update in chapter 5	MD
13.01.2021	003	All	A,M	All	New Hardware Version 1.10	MD
23.07.2021	004	All	M	All	Bugfixes and new Hardware Version 1.20	MD

V	Version
A, M, R	Added, Modified, Removed
Au	Author

Table of Contents

1 Physical Characteristics

ADP-MIPI2LVDS1 is an adapter board that is able to convert MIPI-DSI signals into LVDS signals. The board can produce 2-channels of LVDS signals from one channel (4-data lanes) MIPI-DSI signal interface with the usage of Toshiba TC358775. The board can support up to WUXGA 1920 x 1200, 24-bit/pixel or QXGA 2048 x 1536, 18-bit/pixel panel resolutions.

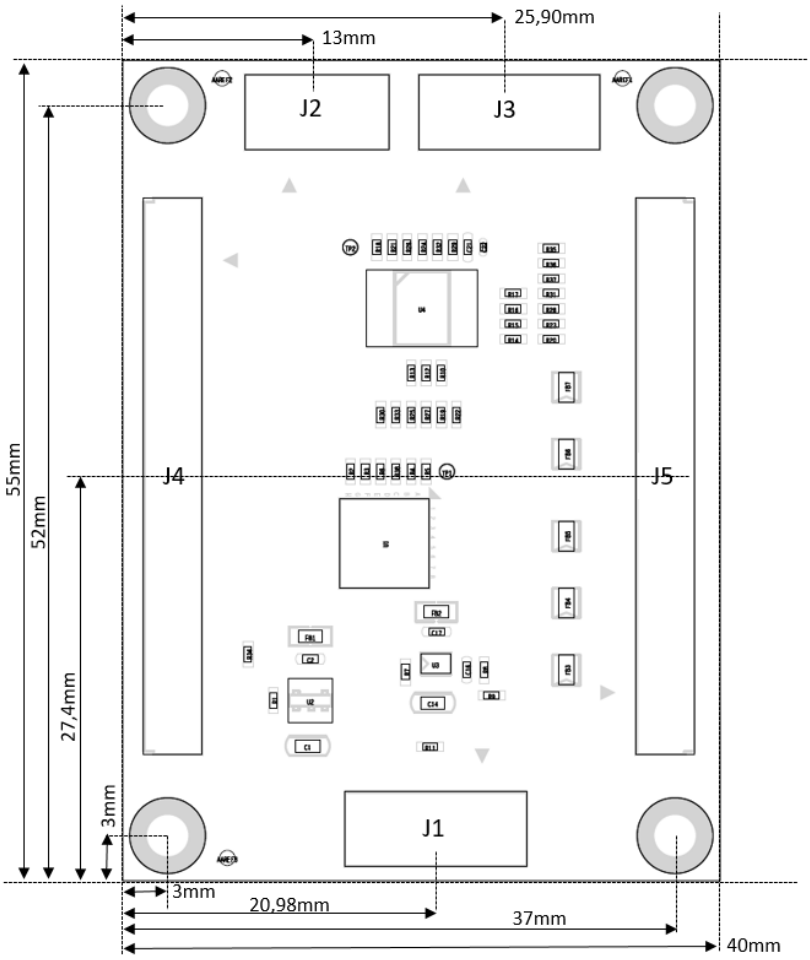


Figure 1: ADP-MIPI2LVDS1 Adapter Board

Dimensions	Description
Size	40mm x 55mm
PCB Thickness	1.66mm ± 0.16mm
Height of the parts on the top side	3.7mm
Height of the parts on the bottom side	0.5mm
Weight	N/A

Table 1: Mechanical Dimensions

2 Connector Layout

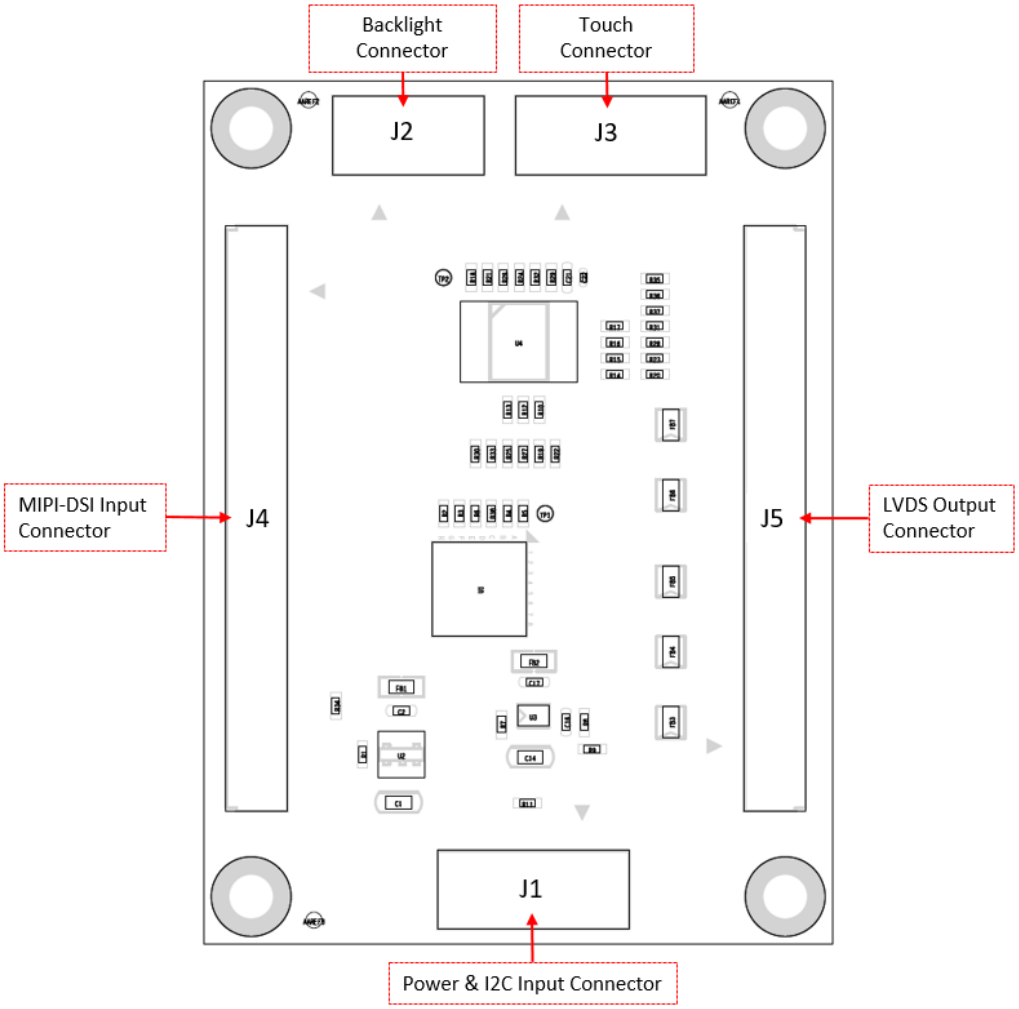


Figure 2: Connector Layout

Ref.	Description	I/O	No. of Pins	Connector Type
J1	Power and I2C Connector	Input	6	DF13-6P-1.25H(20)
J2	Backlight Connector	Output	4	DF13-4P-1.25H(20)
J3	Touch Controller Connector	Output	6	DF13-6P-1.25H(20)
J4	MIPI-DSI Connector	Input	30	FI-X30SSLA-HF-R2500
J5	LVDS Connector	Output	30	FI-X30SSLA-HF-R2500
---	Mating Connector for J1 and J3	-	6	DF13-6S-1.25C
---	Mating Connector for J2	-	4	DF13-4S-1.25C
---	Mating Connector for J4 and J5	-	30	FI-X30H & FI-X30HL

Table 2: Connectors List and Types

3 Connector Pin Layouts

J4: MIPI-DSI Connector - Input				
Pin	**Signal Name**	**I/O**	**Voltage**	**Description**
1	MIPI_DSI _D0_N	I		MIPI-DSI Data Lane 0-
2	MIPI_DSI _D0_P	I		MIPI-DSI Data Lane 0+
3	MIPI_DSI _D1_N	I		MIPI-DSI Data Lane 1-
4	MIPI_DSI _D1_P	I		MIPI-DSI Data Lane 1+
5	MIPI_DSI _D0_N	I		MIPI-DSI Data Lane2-
6	MIPI_DSI _D0_P	I		MIPI-DSI Data Lane 2+
7	GND			
8	MIPI_DSI _CLK_N	I		MIPI-DSI Clock Signal-
9	MIPI_DSI _CLK_P	I		MIPI-DSI Clock Signal+
10	MIPI_DSI _D3_N	I		MIPI-DSI Data Lane 3-
11	MIPI_DSI _D3_P	I		MIPI-DSI Data Lane 3+
12	N.C.	X	X	Not Connected
13	N.C.	X	X	Not Connected
14	GND			
15	N.C.	X	X	Not Connected
16	N.C.	X	X	Not Connected
17	GND			
18	N.C.	X	X	Not Connected
19	N.C.	X	X	Not Connected
20	N.C.	X	X	Not Connected
21	N.C.	X	X	Not Connected
22	N.C.	X	X	Not Connected
23	N.C.	X	X	Not Connected
24	GND			
25	I2C_SDA	I/O	3.3V	I2C Touch-Control Serial Data
26	I2C_IRQn	I	3.3V	I2C Touch-Control Interrupt
27	I2C_SCL	I	3.3V	I2C Touch-Control Clock
28	MIPI_RSTn	I	3.3V	MIPI Reset Signal
29	VLCD	PWR	3.3V	LCD Supply Voltage
30	VLCD	PWR	3.3V	LCD Supply Voltage

Table 3: MIPI-DSI Connector Pin Layout

J5: LVDS Connector - Output				
Pin	**Signal Name**	**I/O**	**Voltage**	**Description**
1	LVDS_A_DATA0_N	O	1.2V	LVDS A Data Lane 0-
2	LVDS_A_DATA0_P	O	1.2V	LVDS A Data Lane 0+
3	LVDS_A_DATA1_N	O	1.2V	LVDS A Data Lane 1-
4	LVDS_A_DATA1_P	O	1.2V	LVDS A Data Lane 1+
5	LVDS_A_DATA2_N	O	1.2V	LVDS A Data Lane2-
6	LVDS_A_DATA2_P	O	1.2V	LVDS A Data Lane 2+
7	GND			
8	LVDS_A_CLK_N	O	1.2V	LVDS A Clock Signal-
9	LVDS_A_CLK_P	O	1.2V	LVDS A Clock Signal+
10	LVDS_A_DATA3_N	O	1.2V	LVDS A Data Lane 3-
11	LVDS_A_DATA3_P	O	1.2V	LVDS A Data Lane 3+
12	LVDS_B_DATA0_N	O	1.2V	LVDS B Data Lane 0-
13	LVDS_B_DATA0_P	O	1.2V	LVDS B Data Lane 0+
14	GND			
15	LVDS_B_DATA1_N	O	1.2V	LVDS B Data Lane 1-
16	LVDS_B_DATA1_P	O	1.2V	LVDS B Data Lane 1+
17	GND			
18	LVDS_B_DATA2_N	O	1.2V	LVDS B Data Lane 2-
19	LVDS_B_DATA2_P	O	1.2V	LVDS B Data Lane 2+
20	LVDS_B_CLK_N	O	1.2V	LVDS B Clock Signal-
21	LVDS_B_CLK_P	O	1.2V	LVDS B Clock Signal+
22	LVDS_B_DATA3_N	O	1.2V	LVDS B Data Lane 3-
23	LVDS_B_DATA3_P	O	1.2V	LVDS B Data Lane 3+
24	GND			
25	I2C_SDA	I/O	3.3V	I2C Serial Data
26	MIPI_INTn	O	3.3V	MIPI Interrupt Signal
27	I2C_SCL	O	3.3V	I2C Clock Signal
28	MIPI_RSTn	PWR	3.3V	MIPI Reset Signal (optional N.C.)
29	VLCD	PWR	3.3V	LCD Supply Voltage
30	VLCD	PWR	3.3V	LCD Supply Voltage

Table 4: LVDS Connector Pin Layout

J1:Power and I2C Connector - Input				
Pin	**Signal Name**	**I/O**	**Voltage**	**Description**
1	VDD_3V3	PWR	3.3V	Voltage Power Supply
2	I2C_SDA	I/O	3.3V	I2C Serial Data
3	I2C_SCL	I	3.3V	I2C Clock
4	TOUCH_RSTn	I	3.3V	Touch Reset (optional N.C.)
5	I2C_INTn	I	3.3V	I2C Interrupt
6	GND			

Table 5: Power and I2C Connector Pin Layout

J2:Backlight Connector - Output				
Pin	**Signal Name**	**I/O**	**Voltage**	**Description**
1	N.C.	X	X	Not Connected
2	BL_ON	O	3.3V	Backlight On (Enable) -> Display
3	BL_PWM	O	3.3V	Backlight PWM -> Display
4	GND			

Table 6: Power and I2C Connector Pin Layout

J3:Touch Controller Connector - Output				
Pin	**Signal Name**	**I/O**	**Voltage**	**Description**
1	VDD_3V3	PWR	3.3V	Voltage Power Supply -> Display
2	I2C_SDA	I/O	3.3V	I2C Serial Data -> Display
3	I2C_ SCL	O	3.3V	I2C Clock -> Display
4	TOUCH_RSTn	O	3.3V	Touch Reset -> Display
5	TOUCH_INTn	O	3.3V	Touch Interrupt -> Display
6	GND			

Table 7: Power and I2C Connector Pin Layout

4 Electrical Characteristics

Signal Name	Description	Min	Typ.	Max	Unit
VDD_3V3	Input Supply Voltage	3.0	3.3	3.6	V
VLCD	LCD Supply Voltage	3.0	3.3	3.6	V
GND	Ground	-	-	-	-

Table 8: Electrical Characteristics

5 ESD and EMI Implementation

The LVDS data lanes were filtered via ferrite beads in order to reduce the EMI. We highly recommend using the adapter board with wires as short as possible.

ESD Rating of the chip is ±2 kV (HBM). The chip has limited built-in ESD protection. There is no ESD protection on the LVDS and MIPI-DSI connectors.

A helpful guide is available from TI; just search for slva680 at ti.com.

6 Second source rules

F&S qualifies their second sources for parts autonomously, as long as this does not touch the technical characteristics of the product. This is necessary to guarantee delivery times and product life. A setup of release samples with released second sources is not possible.

F&S does not use broker components without the consent of the customer.

7 Storage conditions

Maximum storage on room temperature with non-condensing humidity: 6 months
Maximum storage on controlled conditions 25 ±5 °C, max. 60% humidity: 12 months
For longer storage, we recommend vacuum dry packs.

8 ROHS and REACH statement

All F&S designs are created from lead-free components and are completely ROHS compliant.

The products we supply do not contain any substance on the latest candidate list published by the European Chemicals Agency according to Article 59(1,10) of Regulation (EC) 1907/2006 (REACH) in a concentration above 0.1 mass %.
Consequently, the obligations in No. 1 and 2 paragraphs in Annex are not relevant here.
Please understand that F&S is not performing any chemical analysis on its products to testify REACH compliance and is therefore not able to fill out any detailed inquiry forms.

9 Packaging

All F&S ESD-sensitive products will shipping either in trays or in bags.

10 Matrix Code Sticker

All F&S hardware will ship with a matrix code sticker including the serial number. Enter your serial number here https://www.fs-net.de/en/support/serial-number-info-and-rma/ to get information on shipping date and type of board.

Figure 3: Matrix Code Sticker

11 Appendix

Important Notice

The information in this publication has been carefully checked and is believed to be entirely accurate at the time of publication. F&S Elektronik Systeme (“F&S”) assumes no responsibility, however, for possible errors or omissions, or for any consequences resulting from the use of the information contained in this documentation.

F&S reserves the right to make changes in its products or product specifications or product documentation with the intent to improve function or design at any time and without notice and is not required to update this documentation to reflect such changes.

F&S makes no warranty or guarantee regarding the suitability of its products for any particular purpose, nor does F&S assume any liability arising out of the documentation or use of any product and specifically disclaims any and all liability, including without limitation any consequential or incidental damages.

Specific testing of all parameters of each device is not necessarily performed unless required by law or regulation.

Products are not designed, intended, or authorized for use as components in systems intended for applications intended to support or sustain life, or for any other application in which the failure of the product from F&S could create a situation where personal injury or death may occur. Should the Buyer purchase or use a F&S product for any such unintended or unauthorized application, the Buyer shall indemnify and hold F&S and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, expenses, and reasonable attorney fees arising out of, either directly or indirectly, any claim of personal injury or death that may be associated with such unintended or unauthorized use, even if such claim alleges that F&S was negligent regarding the design or manufacture of said product.

Specifications are subject to change without notice.

Warranty Terms

Hardware Warranties

F&S guarantees hardware products against defects in workmanship and material for a period of one (1) year from the date of shipment. Your sole remedy and F&S's sole liability shall be for F&S, at its sole discretion, to either repair or replace the defective hardware product at no charge or to refund the purchase price. Shipment costs in both directions are the responsibility of the customer. This warranty is void if the hardware product has been altered or damaged by accident, misuse or abuse.

Software Warranties

Software is provided "AS IS". F&S makes no warranties, either express or implied, with regard to the software object code or software source code either or with respect to any third party materials or intellectual property obtained from third parties. F&S makes no warranty that the software is useable or fit for any particular purpose. This warranty replaces all other warranties written or unwritten. F&S expressly disclaims any such warranties. In no case shall F&S be liable for any consequential damages.

Disclaimer of Warranty

THIS WARRANTY IS MADE IN PLACE OF ANY OTHER WARRANTY, WHETHER EXPRESSED, OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A SPECIFIC PURPOSE, NON-INFRINGEMENT OR THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION, EXCEPT THE WARRANTY EXPRESSLY STATED HEREIN. THE REMEDIES SET FORTH HEREIN SHALL BE THE SOLE AND EXCLUSIVE REMEDIES OF ANY PURCHASER WITH RESPECT TO ANY DEFECTIVE PRODUCT.

Limitation on Liability

UNDER NO CIRCUMSTANCES SHALL F&S BE LIABLE FOR ANY LOSS, DAMAGE OR EXPENSE SUFFERED OR INCURRED WITH RESPECT TO ANY DEFECTIVE PRODUCT. IN NO EVENT SHALL F&S BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES THAT YOU MAY SUFFER DIRECTLY OR INDIRECTLY FROM USE OF ANY PRODUCT. BY ORDERING THE PRODUCT, THE CUSTOMER APPROVES THAT THE F&S PRODUCT, HARDWARE AND SOFTWARE, WAS THOROUGHLY TESTED AND HAS MET THE CUSTOMER'S REQUIREMETS AND SPECIFICATIONS

12 Content