

Datasheet

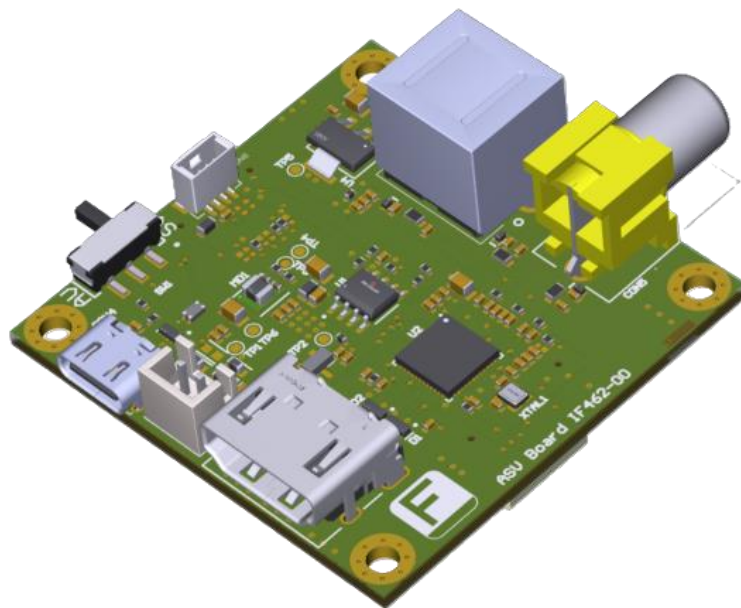
FORTEC Integrated

IF462-00

ASV Board (CVBS/S-Video to HDMI Converter)

ZU-02-527

Version 1.0



23.02.2026

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1 Revision History

Date	Rev.No.	Description	Page
23.02.2026	1.0	Initial version	All

2 General Overview

The ASV converter board main SoC for converting CVBS (composite) and S-Video (Y/C) analog inputs into a digital HDMI output.

It integrates a 10-bit ADC, video decoder, scaler, and HDMI transmitter in a single package, allowing a compact and cost-effective design (50 × 50 mm target).

The design complies with HDMI 1.3 standard and EMC EN 55032 Class B.

3 Electrical Specifications

3.1 Electrical Characteristics

All measurements are done at 25°C ambient temperature.

Item	Symbol	Condition	MIN.	TYP.	MAX.	Unit	Note
Supply Voltage	V _{IN}		4.5	5	5.5	VDC	
Current Consumption	I _{IN}	All features Active	-	250	-	mA	

3.2 Absolute Maximum Ratings

Permanent damage to the device may occur if maximum values are exceeded.

3.2.1 Electrical Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit	Note
Supply Voltage (5V)	V _{IN}	4.4	5.5	VDC	1
Continuous Input Current	I _{IN}	0	250	mA	1

Note (1): Within operating temperature range.

3.2.2 Environmental Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit	Note
Storage Temperature	T _{st}	-35	+85	°C	
Operating Temperature	T _{op}	-20	+70	°C	

4 Interface Requirements

4.1 Block Diagram

The next figure shows the interfaces and internal components in the ASV board.

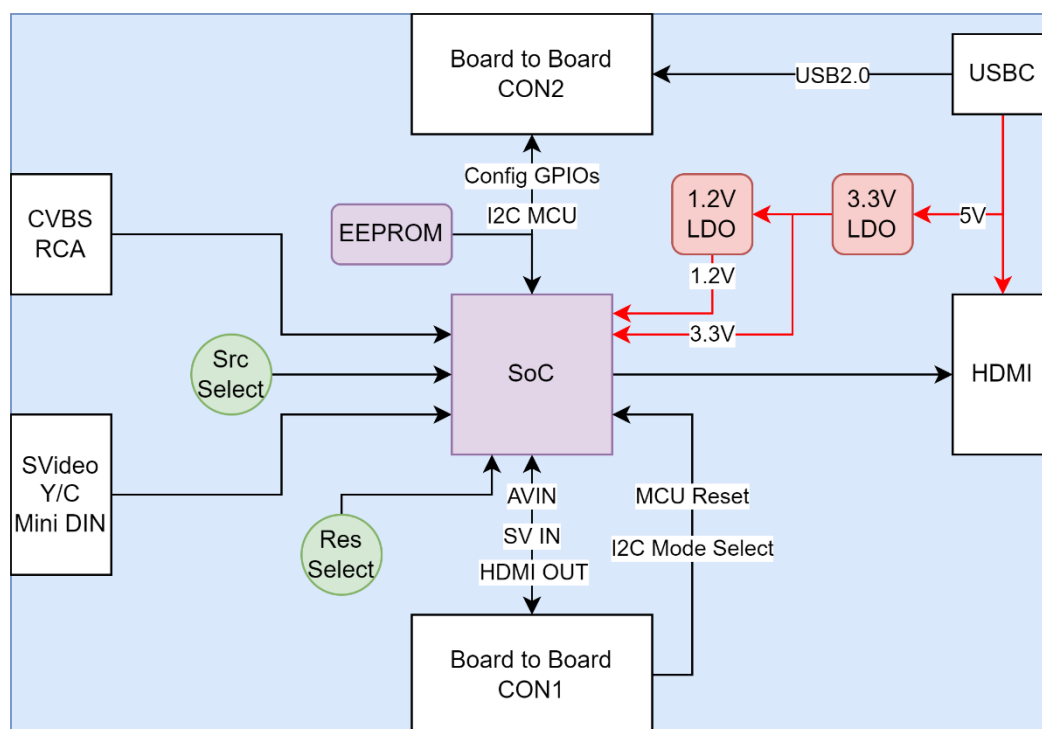


Figure 1: Block diagram of ASV Board

4.2 Electrical Interfaces

The ASV Board provides the following interfaces:

- 1x 5 VDC power input for the internal power supply (V_IN)
- 1x 5V USB type C connector (V_USB)
- 1x Yellow RCA Connector for CVBS Input Signal
- 1x Mini DIN Connector for Y/C S-Video Input Signal
- 1x HDMI type A Connector for HDMI 1.3 Output Signal
- I2C Interface (Programming)
- 2x Board to Board Connectors for Interfacing
- Toggle Switch to change source between S-Video and CVBS

4.2.1 SoC

- The chosen SoC for ASV board is a highly integrated video decoder and HDMI transmitter IC, designed to convert analog video signals (such as CVBS and S-Video (Y/C)) into digital HDMI output.
- It supports NTSC, PAL, and SECAM video standards, and automatically detects the input format for simplified system design.
- The device combines a low-power analog front-end, a 10-bit ADC video decoder, a YCbCr 4:2:2 digital video processor, and an HDMI transmitter in a single compact chip, minimizing external components.
- The output standard HDMI 1.3-compliant video up to 1080p@60Hz, suitable for applications such as AV converters, legacy video equipment, multimedia displays, and embedded systems.
- Communication and configuration are handled through a standard I²C interface, allowing firmware control over video format, color space, and HDMI output parameters.
- It can operate from a single 3.3 V supply and includes internal regulators for core voltages.
- The supply voltage of the microcontroller should be nominal 3.3V and 1.2V
- The temperature operating range of the SoC is -40°C to +85°C.

Key Features

- Supports CVBS and S-Video (Y/C)
- Manual input selection between Y/C and CVBS.
- Automatic NTSC/PAL/SECAM decoding with adaptive 3D comb filter.
- Integrated HDMI transmitter, compliant with HDMI 1.3 / DVI 1.0.
- Supports resolutions up to 1080p.
- Single-chip solution with minimal external components.
- I²C control interface for flexible configuration.
- Low power consumption, single 3.3 V operation.

4.3 Power Supply

4.3.1 Power Concept

The next figure shows a possible power supply architecture for the board.

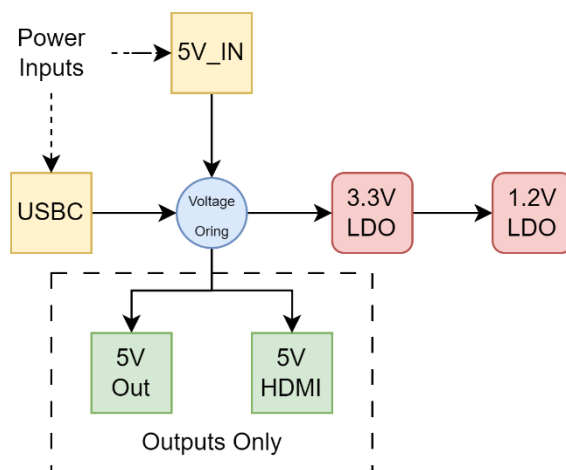


Figure 2: Power Concept of ASV Board

4.3.2 Power Consumption Estimation

Voltage Condition	5V / mA	3.3V / mA	1.2V / mA	Total Power Consumption	Note
All Features Active	250	230	20	1.25W	5V is the main power input

4.3.3 Supply Voltage – 5V

- The External 5V supply voltage (V_IN) via USB or Power in Connector

4.3.4 Supply Voltage – 3.3 V

- This Voltage is generated Internally via Buck Converter

4.3.5 Supply Voltage – 1.2 V

- This Voltage is generated Internally via LDO

5 Mechanical Requirements

5.1 Connector Overview

Connector	Location	Description	No. of Pins	Type	Manufacturer
CON1	Bottom	Board to Board Interface	40	DF17(4.0)-40DP-0.5V(57)	Hirose
CON2	Bottom	Board to Board Interface	30	DF17(4.0)-30DP-0.5V(57)	Hirose
CON3	Top	HDMI Type A	19	2086581001	Molex
CON4	Top	USB Input	12	DX07S016JA1R1500	JAE
CON5	Top	RCA Yellow for CVBS	2	KLPX-0848A-2-Y	Kycon
CON6	Top	Mini DIN for Y/C S-Video	4	KMDGX-4S-BS	Kycon
CON7	Top	5V IN Incase No USB is used	2	B2B-XH-A(LF)(SN)	Molex

Top and Bottom Board Connectors

5.2 Connectors Pin Assignment of ASV Board

5.2.1 Board to Board Connector – (CON1)

Connector CON1 for external Interface.

Pin	Signal	Description
1	GND	
2	GND	
3	HD_TX2P	
4	GND	
5	GND	
6	RESET	SoC RESET Active LOW
7	HD_TX2N	
8	MCU_SEL	LOW: External Programming, otherwise: Internal Program.
9	HD_TX1P	
10	DVDD33	
11	GND	
12	DVDD33	
13	HD_TX1N	
14	DVDD12	
15	HD_TX0P	
16	DVDD12	
17	GND	
18	GND	
19	HD_TX0N	
20	CIN_SV	
21	HD_TXCP	
22	GND	
23	GND	
24	YIN_SV	
25	HD_TXCN	
26	GND	
27	NC	
28	GND	
29	NC	
30	5V_OUT	
31	DDCSCL	
32	5V_OUT	
33	DDCSDA	
34	GND	
35	GND	
36	GND	
37	5V_HDMI	
38	AVIN_CVBS	
39	HPD	
40	GND	

5.2.2 Board to Board Connector – (CON2)

Connector CON2 for external Interface.

Pin	Signal	Description
1	GND	
2	GND	
3	5V_OUT	5V External Power Output
4	DVDD33	
5	5V_OUT	5V External Power Output
6	DVDD33	
7	5V_OUT	5V External Power Output
8	DVDD12	
9	GND	
10	GND	
11	GND	
12	GPIO4	Mirrors HDMI Hot-Plug Detect or used as status output LED
13	5V_IN	5V External Input Power
14	GPIO3	High = Auto-detect between CVBS / S-Video
15	5V_IN	5V External Input Power
16	GPIO2	Low = Load config from EEPROM, High = I ² C control
17	5V_IN	5V External Input Power
18	GPIO1	High = Enable Y/C (S-Video) mode
19	AVDD12	Analog 1.2V
20	GPIO0	Low = CVBS, High = Y/C S-Video
21	GND	
22	GND	
23	USB_DN	USB D Minus
24	EEPROM_WP	Write Protect Pin of External EEPROM
25	USB_DP	USB D Plus
26	DVDD33	Digital 3.3V
27	GND	
28	MCU_I2C_SDA	MS1858E I2C Bus SDA, as well as the EEPROM
29	AVDD33	Analog 3.3V
30	MCU_I2C_SCL	MS1858E I2C Bus SDA, as well as the EEPROM

5.2.3 HDMI Connector – (CON3)

Pin	Signal
1	D2+
2	GND
3	D2-
4	D1+
5	GND
6	D1-
7	D0+
8	GND
9	D0-
10	DCK+
11	GND
12	DCK-
13	CEC
14	NC
15	SCL
16	SDA
17	DDC/CEC_GND
18	5V
19	HPD

1.1.1. USB C Connector – (CON4)

Pin	Signal
1	VBUS
2	D-
3	D+
4	GND

1.1.2. Yellow RCA CVBS Connector – (CON5)

Pin	Signal	Description
1	GND	
2	AVIN	CVBS

5.2.4 Mini DIN Y/C S-Video – (CON6)

Pin	Signal	Description
1	GNDY	
2	GNDC	
3	YIN	
4	CIN	

5.3 Board Dimensions

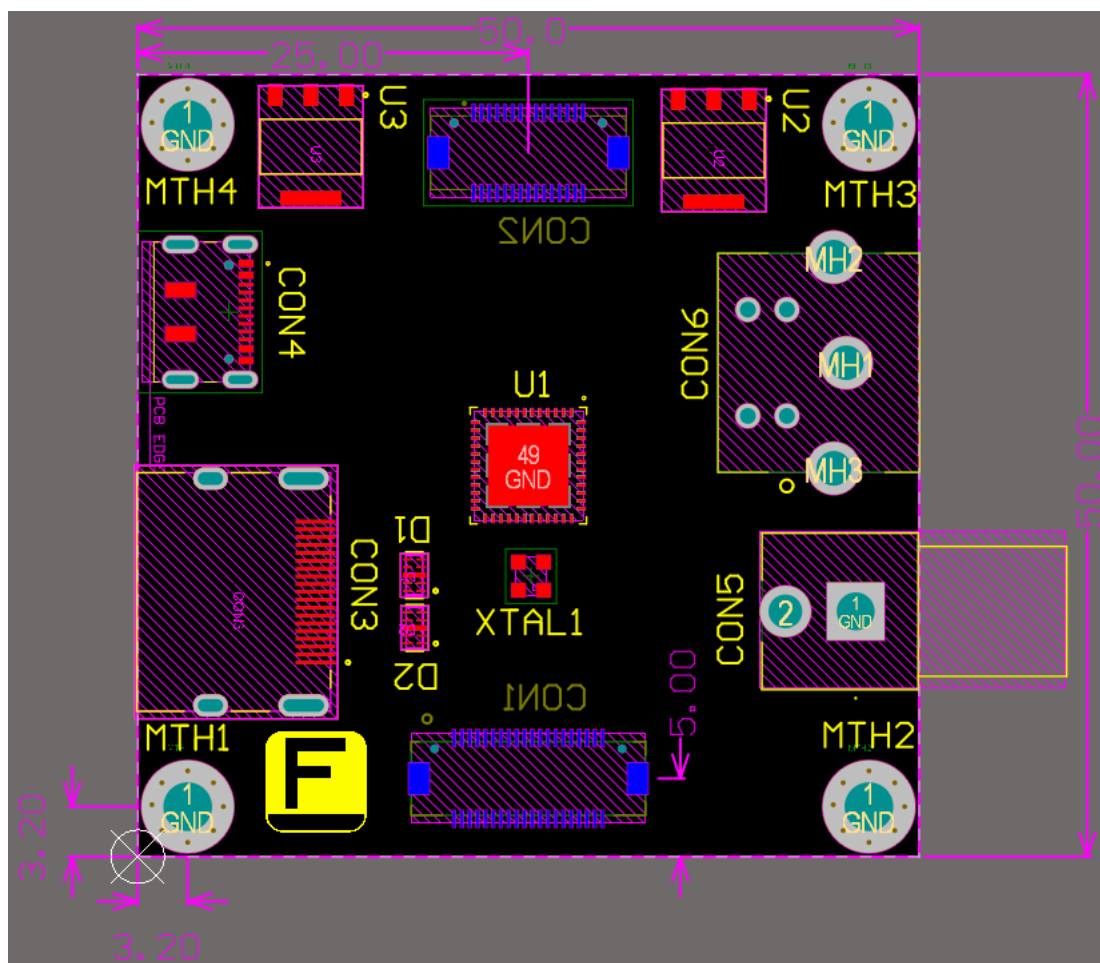


Figure 3: Board Dimensions Picture

		Min	Typ	Max
Width		TBD mm	50 mm	TBD mm
Length		TBD mm	50 mm	TBD mm
Height	PCB	1.5 mm	1.6 mm	1,76 mm
	Components on Top	-	13.0 mm	-
	Components on Bottom	-	4 mm	-

5.4 Cooling

ASV Board V1.0 can operate without cooling in the whole specified temperature range.

5.5 Board to Board Connections:

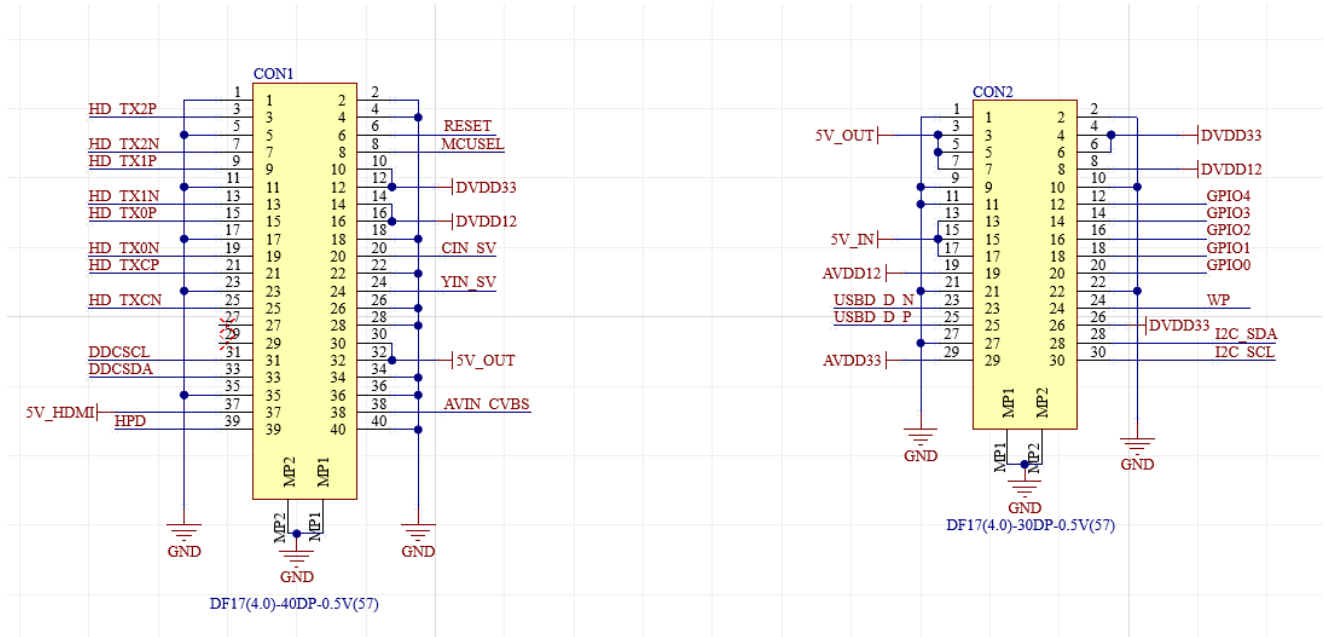


Figure4: Schematic Net Connections of Board-to-Board Connectors

5.5.1 Guide Board to Board Parts:

5.5.1.1 CON1 Notes:

CON1 is a Plug 40 Pin DF17(4.0)-40DP-0.5V(57) which Requires a Receptacle in the other board to fit in with the Part Number: DF17(4.0)-40DS-0.5V(57)

5.5.1.2 CON2 Notes:

CON2 is a Plug 30 Pin DF17(4.0)-30DP-0.5V(57) which Requires a Receptacle in the other board to fit in with the Part Number: DF17(4.0)-30DS-0.5V(57)

5.5.2 Orientation and Pin Numbering Notes:

Please note that the Orientation of the connectors is assigned by silkscreen notch indicating Pin Number 1 and the first row of odd pin numbers, and the pins numbering is done for the first row for odd numbers and the second row for even numbers.

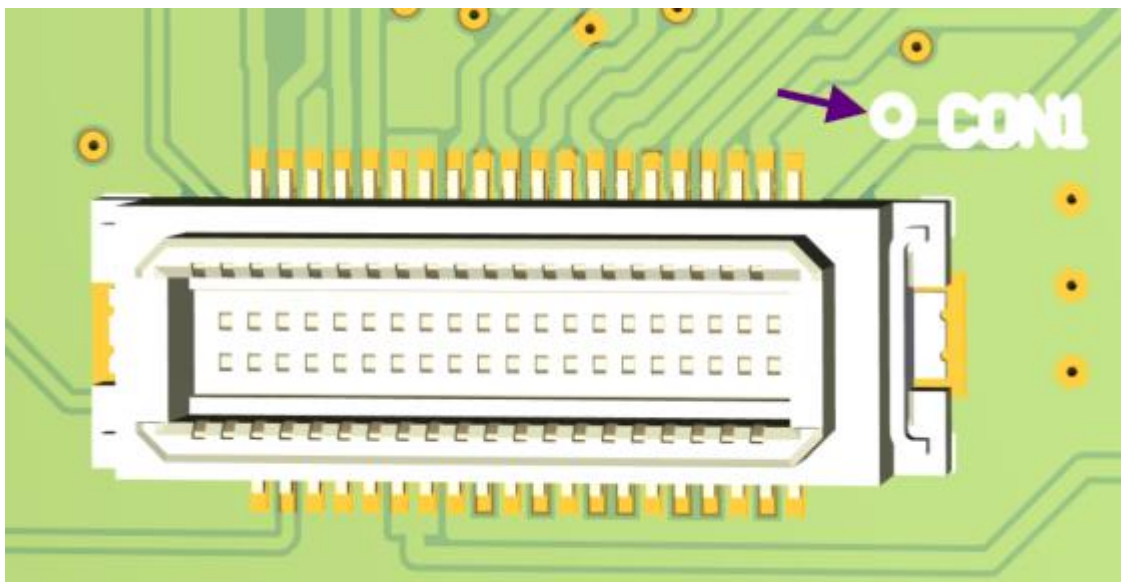


Figure5: CON1 Notch for Pin 1 determination

6 Software Specifications

The Software Configuration tool is provided by FORTEC, it is a desktop application for EEPROM Parameters configurations in case of there is a need to change the default parameters.

7 Ordering Information

Part Number	Description
ZU-02-527	IF462-00 ASV Module

Our company network supports you worldwide with offices in Germany, Austria, Switzerland, Benelux, Egypt, the UK and the USA. For more information please contact:

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