

# Digilent Video Decoder Board (VDEC1) Reference Manual

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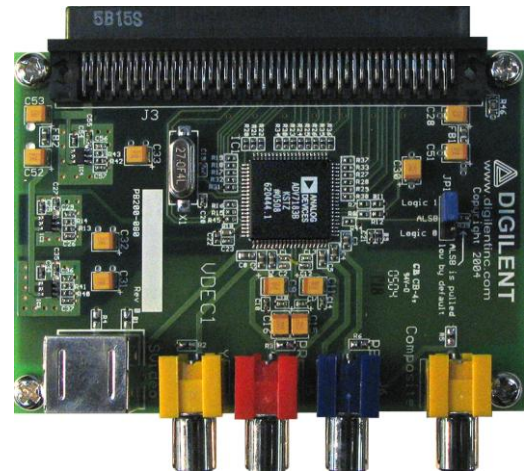
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## Overview

The Video Decoder 1 board (VDEC1), centered on the ADV7183B Video Decoder chip from Analog Devices, can digitize NTSC, PAL, and SECAM video signals. The ADV7183B automatically detects standard analog baseband television signals, and digitizes them with three 54MHz 10-bit ADCs. Output data can be sent to an attached system board in 8-bit or 16-bit YCrCb 4:2:2 format.

Features include:

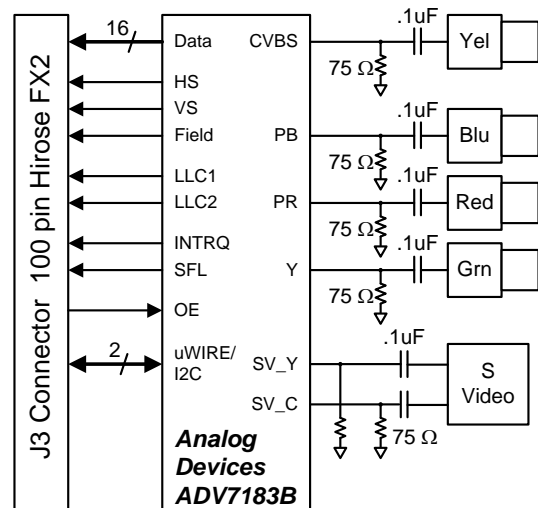
- component, composite, and S-video inputs;
- I<sup>2</sup>C<sup>®</sup> compatible control bus;
- high-speed Hirose FX2 data connector
- supports NTSC, PAL, and SECAM inputs
- 8-bit or 16-bit YCrCb 4:2:2 outputs plus HS, VS and Field signals
- programmable controls include peak white, hue, brightness, saturation and contrast.



## Functional Description

The VDEC1 board is essentially a “carrier” for Analog Devices’ ADV7183B Video Decoder chip. It contains all required support circuitry, including well-filtered and stable power supplies, properly terminated 75-ohm inputs, a stable 27-MHz clock source, various video input connectors, and input protection networks. Refer to the Analog Devices data sheet for more information about the ADV7138B.

The VDEC1 can be used with any Digilent board that uses the Hirose FX2 connector. Catalog entries in the Digilent products webpage contain a “connector” field that



**VDEC1 Circuit Diagram**

clearly shows which boards have the Hirose connector.

## Operation

In operation, the VDEC1 should not be attached to a system board until the signals driving the Hirose connector from the system board have been properly defined. If the

VDEC1 board is attached to a system board, and the system board is driving as outputs the same signals the VDEC1 is driving, damage to the VDEC1 and system board will result.

Before attaching the VDEC1 to a system board, ensure that any power-on auto-loaded configuration drives the Hirose pins correctly. Otherwise, ensure the system board powers on in a reset mode, not driving the Hirose pins as outputs.

Once the VDEC1 board is attached to a system board, the ADV7183B chip must be programmed (via its I<sup>2</sup>C<sup>®</sup> compatible port) for a specific operating mode before output video data is available. Please refer to the ADV7138B data sheet for information on programming various operation modes.

After an operating mode has been selected, a video source can be attached to the appropriate video input connector, and output digital video data will be available.

## Hirose Connector Pinout

The VDEC1 contains a 100-pin Hirose FX2 socket connector that mates with a corresponding Hirose plug connector on a system board. Pin1 of the socket connector attaches to pin1 of the plug connector. Thus, to generate a pin connection list for a given system board, the signal definitions in the following table can be directly mapped to the signal definitions on the system board (e.g., the signal name on VDEC1 pin5 maps directly to the signal on the system board pin5).

A Pin #	Signal	B Pin #	Signal
1	VCC33	1	Shield
2	VCC33	2	GND
3	NC	3	NC
4	NC	4	NC
5	NC	5	GND
6	RESET	6	GND
7	SDA	7	GND
8	SCLK	8	GND
9	P15	9	GND
10	P14	10	GND
11	P13	11	GND
12	P12	12	GND
13	OE	13	GND
14	FIELD	14	GND
15	VS	15	GND
16	HS	16	GND
17	P11	17	GND
18	P10	18	GND
19	P9	19	GND
20	P8	20	GND
21	INTRQ	21	GND
22	SFL	22	GND
23	P7	23	GND
24	P6	24	GND
25	P5	25	GND
26	P4	26	GND
27	P3	27	GND
28	P2	28	GND
29	LLC2	29	GND
30	P1	30	GND
31	P0	31	GND
32	PWRDN	32	GND
33	NC	33	GND
34	NC	34	GND
35	NC	35	GND
36	NC	36	GND
37	NC	37	GND
38	NC	38	GND
39	NC	39	GND
40	NC	40	GND
41	NC	41	GND
42	NC	42	GND
43	NC	43	GND
44	NC	44	GND
45	NC	45	GND
46	GND	46	GND
47	NC	47	GND
48	GND	48	NC
49	VCC5	49	VCC5
50	VCC5	50	Shield