*i*Wave
Embedding Intelligence
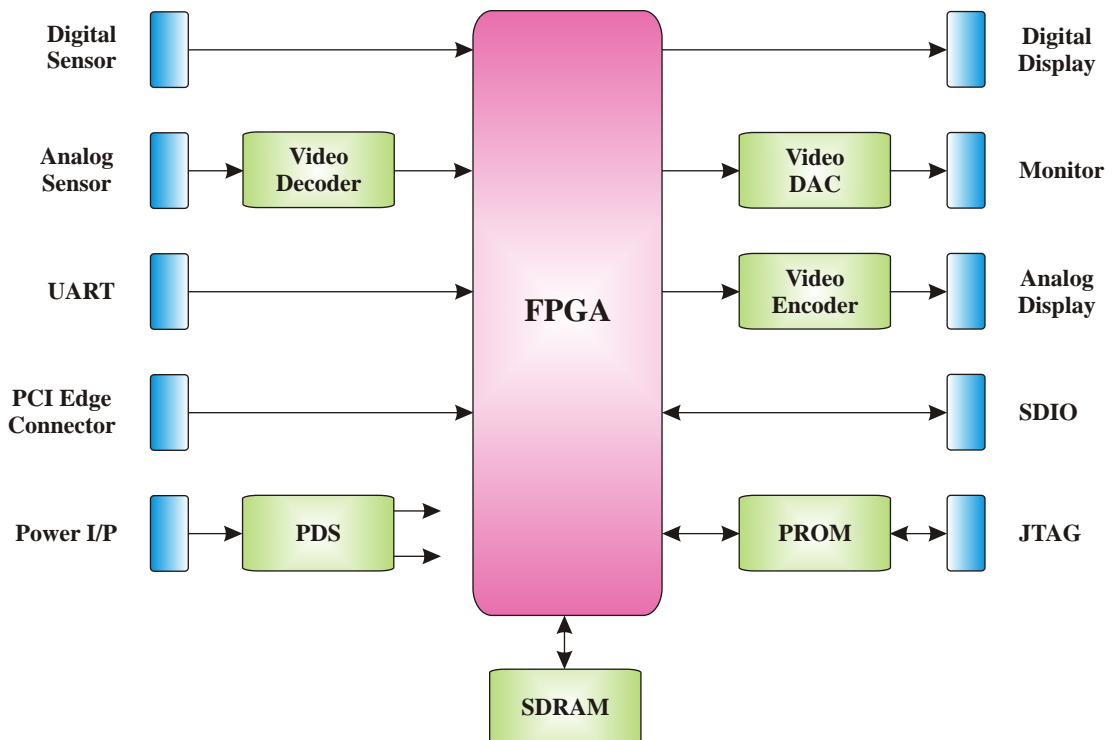
*i*W-Video Demo Board

Overview

iW-Video Demo Board is a development platform to demonstrate various video functions. This can also be used a reference design to evaluate the performance of video & related IP cores.

Features

- ❖ Half size PCI card form factor
- ❖ FPGA: Xilinx Spartan-3A DSP - XC3SD3400A-4CSG484CES
- ❖ Clock: 33MHz crystal clock oscillator
- ❖ Memory: 2 SDRAM devices of 8M x 16-bit configuration
- ❖ Connectors and Interfaces:
    - \# Universal PCI 64-bit card edge
    - \# SD connector
    - \# Headphone & Mic jack (UCB1400 audio CODEC)
    - \# RCA connector for video input (ADV7180 video decoder)
    - \# RCA connector for video output (ADV7393 video encoder)
    - \# VGA connector (ADV7123 video DAC)
    - \# RS-232 serial port
    - \# FPC connector (Hitachi LCD TX09D70VM1CCA)
    - \# 16x2 header to connect to OV7720 camera module
    - \# 4 LED outputs
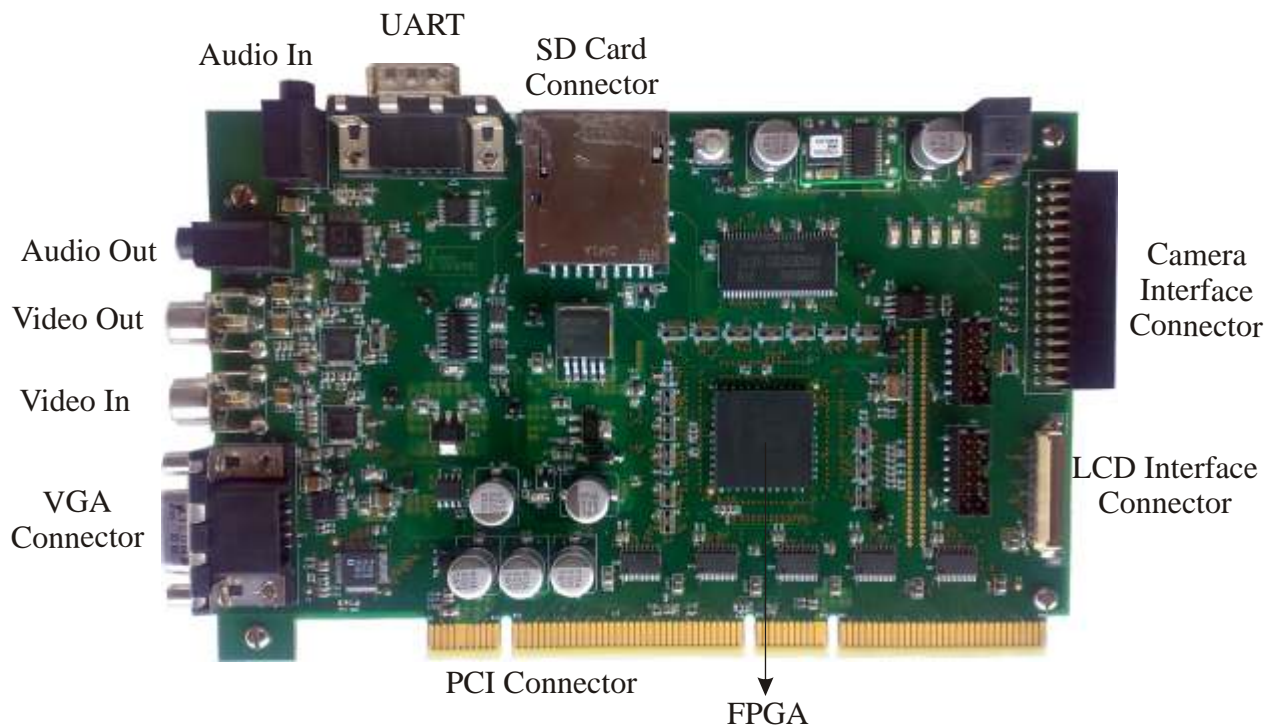   - \# Option for external 5V power input

Block Diagram

Demonstration Functions

❖ **Camera Interface:**Extracts pixels from frames received from a digital camera sensor for processing by other video functions or for raw streaming

❖ **LCD Interface:** Presents fully formatted frames to an LCD with all relevant signals like VSYNC, HSYNC, Data Enable, pixel clock and pixel data

❖ **Video Decoder Interface:** Extracts pixels from frames received from a video decoder for processing by other video functions or raw streaming. The frames are originally recorded in analog NTSC / PAL and converted to digital Y´CbCr by the decoder as per ITU-R 601/656 recommendations. Suitable for use in analog TV transmission systems.

❖ **Video Encoder Interface:** Presents SDTV frames formatted in ITU-R 601/656 to a video encoder with all relevant signals like VSYNC, HSYNC, pixel clock and pixel data. Suitable for use in analog TV reception systems

❖ **Chroma Resampler:** Allows pixel color intensity adjustment

❖ **Color Space Converter:** Converts RGB to Y´CbCr or vice-versa. Acts as the interface between devices operating in different color-spaces

❖ **Video Scaler:** Upscales (x3) or downscales (x16) images to meet LCD / video encoder resolution requirements.

❖ **Image Rotation:** Rotates the displayed image by any angle from 0° to 360°

❖ **I2C Master:** Programs any module above as desired through 2-wire interface.

Board Picture

Audio In — UART — SD Card Connector — Audio Out — Video Out — Video In — VGA Connector — PCI Connector — FPGA — Camera Interface Connector — LCD Interface Connector

About Us

*i*Wave Systems Technologies is an embedded Hardware and Software Turnkey Design Services company, focused on providing integrated solutions for developing innovative products and systems in the areas of Communication, Consumer electronics and Multimedia. iWave offers complete turnkey solutions for systems engineering and product development.

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