

# AVP-47

## Anisotropic 2D Image Scaler



The AVP-47 Anisotropic 2D Image Scaler from Trilinear Technologies, Inc. provides the highest quality image scaling suitable for the most demanding customer applications. The proprietary two dimensional scaling algorithm provides simultaneous horizontal and vertical image resizing while preserving and enhancing the fine details of the source picture. Programmable scaling coefficients allow for multiple mode operation and product differentiation.



The AVP-47 is delivered as a soft core and may be implemented on both FPGA and ASIC platforms. The Trilinear Technologies' development process allows for migration from FPGA to ASIC for prototyping and production solutions. The AVP-47 core offers an optimal solution for both technologies without the typical limitations of performance in ASIC form and area in FPGA form. This flexibility is achieved through a state of the art internal architecture and best in class design practices.

The AVP-47 core is provided with a complete 'C' reference driver and a fully documented API. The core is available on the Trilinear Technologies' Viper Development platform. This FPGA based reference system provides a complete development environment for core evaluation as well as early software development.

### Overview

- Real time image scaling
- Content adaptive processing
- Zero CPU overhead after initial setup
- Complete HW / SW verification suite

### Reference Software

- Sample driver and real time video player application included in deliverables
- C source code provided
- Fully documented API

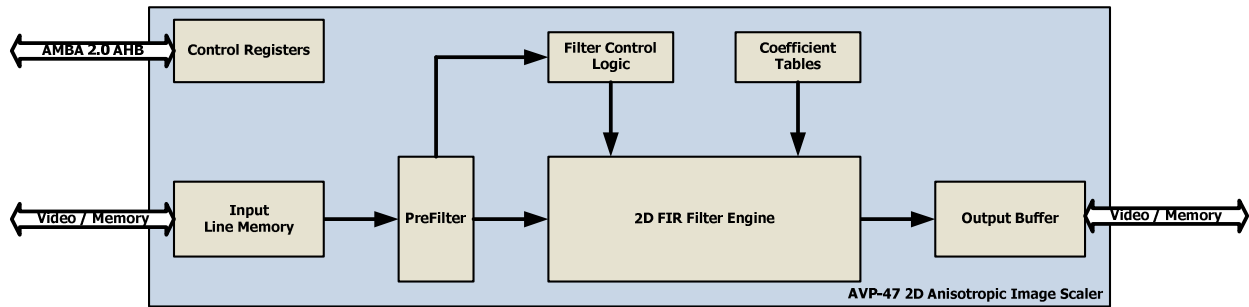
### Core Details

- Variable scale factor with single pixel increments
- Programmable coefficient memory for customer control of results
- 24-bits and 30-bits per pixel support
- 8X downscale
- 64X upscale
- AMBA 2.0 APB Slave Interface

### FPGA Development Platform

- Includes the AVP-47 Scaler, DDR-3 interface, and display controller
- DVI digital output
- Integrated 32-bit microprocessor supports early software development
- HDMI Video input for real time testing

## BLOCK DIAGRAM



## DESIGN DATABASE

Trilinear Technologies delivers an extensive design database for the AVP-47 2D Anisotropic Image Scaler core. The database includes all of the files required to implement the design on multiple platforms. In addition to the core implementation files, reference software drivers and applications are included along with the associated documentation to reduce the amount of time for software development.

- HDL source files for the function design
- HDL source files for high level testing
- Functional specification
- Timing constraints summary document
- Generic SRAM simulation models
- C Reference Driver
- C Reference video player application

## REFERENCE HARDWARE

The AVP-47 is available for evaluation and early software development using the Trilinear Technologies "Viper" development system. The Viper development system is based on the Xilinx ml605 board and provides a high degree of functionality including an industry standard 32-bit microprocessor.

Each Viper system includes a host processor and peripheral suite running a flash based ROM monitor which loads at power up. The ROM monitor allows for the download of application code developed using the GCC tool chain. This capability allows for simultaneous hardware and software evaluation efforts.

#### **Integrated Host Processor**

- 32-bit RISC processor
- Embedded ROM monitor
- Up to 150MHz operation
- Internal AMBA 2.0 bus system

#### **Built-In ROM Monitor**

- Detects integrated IP at run time
- Applications built using GCC may be downloaded using the serial port or Ethernet
- Includes traditional shell commands

#### **DDR-3 Memory System**

- 512 MB PC3-8500
- 800 MHz Data Rate
- Peak bandwidth of 6.4 GB / sec

#### **Onboard DVI Interface and LCD Controller**

- Programmable display timing controller
- Display path supports multiple color depths

#### **Support Functions**

- UART, Timers, GPIO
- Strata Flash Controller, 32 MB
- IIC Master

#### **Xilinx ml605 Based System**

- Xilinx Virtex-6 LX240T
- Compact Flash card programming interface for rapid field upgrades

## AVAILABILITY AND ORDERING INFORMATION

The AVP-47 2D Anisotropic Image Scaler is currently available as a soft core. Customers may select from off-the-shelf versions of the AVP-47 or a version with customized interfaces. Custom host processor interfaces may be requested at no additional charge.

Please contact Trilinear Technologies for pricing and additional information.

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