

This chapter describes the XIL functions that are specific to the Creator and Creator 3D Graphics Accelerators.

Introduction

XIL is Sun's foundation imaging and video library. Several important XIL functions have been accelerated for the Ultra Platforms using the UltraSPARC Visual Instruction Set (VIS) and the Creator Graphics Accelerator.

XIL Data Types

XIL supports a very general image structure, and not all types of XIL images are accelerated using VIS and Creator. The XIL data types supported in the VIS port are:

- One, two, three, and four-banded unsigned byte images
- One, two, three, and four-banded signed short images
- Band-aligned child images
- All regions of interest

Classes of XIL Functions

These classes of XIL imaging functions have been accelerated:

- Copy/Cast
- ALU/Blend
- Convolve
- Scale
- Lookup
- Band Combine

These XIL video functions have been accelerated:

- MPEG 1 decompression
- JPEG decompression

In addition, several display molecules have been accelerated using the Creator for display.

Accelerated Functions

The following table shows the XIL functions accelerated using VIS.

| Class | XIL Function | Example Uses |
|--------------|---|---------------------------------------|
| Copy/Cast | xil_copy | Copy images, insert and extract bands |
| | xil_cast (8->16, 16->8), xil_set_pixel | Convert data types |
| | xil_set_value | Fill an image with constants |
| ALU/Blend | xil_absolute, xil_add, xil_subtract, xil_multiply, xil_add_const, xil_subtract_const, xil_subtract_from_const, xil_multiply_const, xil_and, xil_or, xil_xor, xil_and_const, xil_or_const, xil_xor_const, xil_min, xil_max, xil_threshold, xil_blend | Basic image processing operations |
| Convolve | xil_convolve | Filter an image |
| Scale | xil_scale | Zoom an image |
| Lookup | xil_lookup | Table lookup on an image |
| Band Combine | xil_bandcombine | Color Conversion |
| Video | xil_decompress | JPEG, MPEG1 video decompression |

The following table shows the display molecules accelerated using VIS and the Creator Graphics Accelerator.

| Class | XIL Function |
|--------------|---|
| Copy/Cast | {xil_copy, xil_set_value} + display |
| ALU | {xil_add,xil_add_const, xil_subtract, xil_subtract_const, xil_subtract_from_const, xil_and, xil_and_const, xil_multiply, xil_multiply_const, xil_not, xil_or, xil_or_const, xil_max,xil_min, xil_xor, xil_cor_const, xil_threshold, xil_set_value}+ display |
| Lookup | xil_lookup + display |
| Scale | xil_scale + display |
| Video | xil_decompress_JPEG+color_convert xil_decompress_MPEG1+color_convert xil_decompress_MPEG1+color_convert+display xil_decompress_MPEG1+color_convert+scale+display |

