AVERLOGIC

Preliminary

AL600

DTV Controller

Applications

- PIP HDTV/TV Scan Convert Box
- PIP TV to PC Monitor Format/Scan Rate Converter
- PIP Video Enhancer/Advanced TV Tuner box
- PIP DTV & Progressive Scan TVs

Description

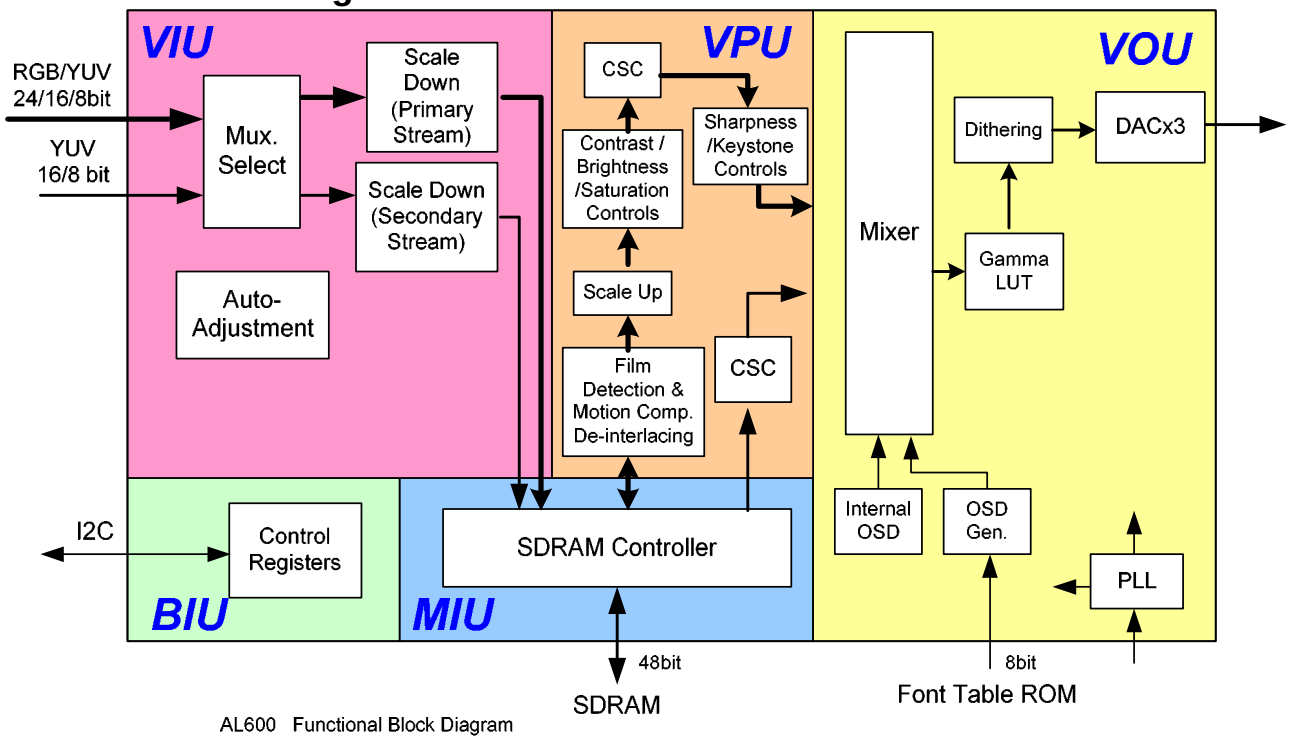
AL600 is a highly integration video processor which supports dual-port input with multiple graphics/video formats capable and mixing captured frames output with scaling, overlaying and alpha blending effects…etc. It can be used for most video conversion and processing applications.

AL600 is equipped with a high quality scaling engine that automatically maintains full screen output display, regardless of the resolution of the incoming signals. Applying AverLogic's proprietary scaling algorithm, the primary input video can be scaled up and scaled down independently in horizontal & vertical directions. It also provides film detection, advanced de-interlacing, filtering, and scaling which's able to convert and process the interlaced video to be displayed on progressive outputs.

General Features

- Support Digital RGB/YUV Dual inputs and Non-interlaced RGB/YPbPr Analog output
- Dual Input Ports for Graphics/Video PIP overlaying
- Film Detection with Inverse 3:2/2:2 Pull Down supported
- Advanced De-interlacing with Motion Compensation
- AverLogic's Proprietary Scaling Algorithm for Scaling Up and Down
- Built-in 2K Bytes OSD RAM and support External OSD ROM
- Available in 208-pin PQFP
- 2.5V Core and 3.3V I/O power supplies with 5V input tolerant

Function Block Diagram



AL600 Functional Block Diagram

Features

Input Interface:

- Primary input resolution supports up to 1280x1024 @75Hz
- Simultaneous Primary and Secondary input for PIP overlaying (Video over Graphics or Video over Video)
- Input resolution support:
  - VGA up to SXGA(RGB 24bit) and HDTV
  - TV(NTSC/PAL)
- Video interface supports ITU-R 601/656(8/16bit), YUV422

Output Interface:

- Output resolution up to 1280x1024 @60Hz
- Non-interlaced RGB/YPbPr Analog output supported

SDRAM Interface:

- Support maximum 48bit bus width SDRAM interface, two or three of SDRAM configuration up to 100 MHz supported

Scan Rate & Format Conversion:

- De-Interlacing for Interlaced Video Input
- Film Detection with Inverse 3:2 & 2:2 pull down supported
- Motion Compensation De-interlacing with Spatial and Temporal Filtering support
- Frame Rate Conversion(FRC) from 50Hz up to 120Hz

Zoom engine and DSP:

- Independent Scale Up and Down in both Horizontal and Vertical direction with 4-line, high precision interpolation
- Digital Brightness/ Contrast/ Saturation Control
- Keystone Correction for Front-Projection Systems
- Sharpness Control
- Built-in LUT for Gamma Correction and Color Adjustment
- Dithering Logic for Color Depth Enhancement

Overlaying and Alpha Blending:

- Chroma and Color Key Overlaying support
- Two input source overlaying for PIP display with Alpha Blending/Transparency effect
- By pixel alpha blending support

I2C Serial Port Registers Access:

- Registers can be accessed by serial I2C port for registers data update

On Screen Display (OSD):

- 2k Bytes Internal OSD RAM for fine bitmaps and text font
- Dual internal OSD windows support with Alpha Blending/Transparency effect
- Support up to 64k Bytes External ROM for font and bitmap data

Other Features:

- Primary input stream VBI pass through support
- Automatic screen positioning and phase adjustment support for LCD output display
- Frame capture Mirroring support in Horizontal or Vertical direction
- NTSC/PAL Video Input Auto-Detection support
- Power Saving support
- Slave mode support

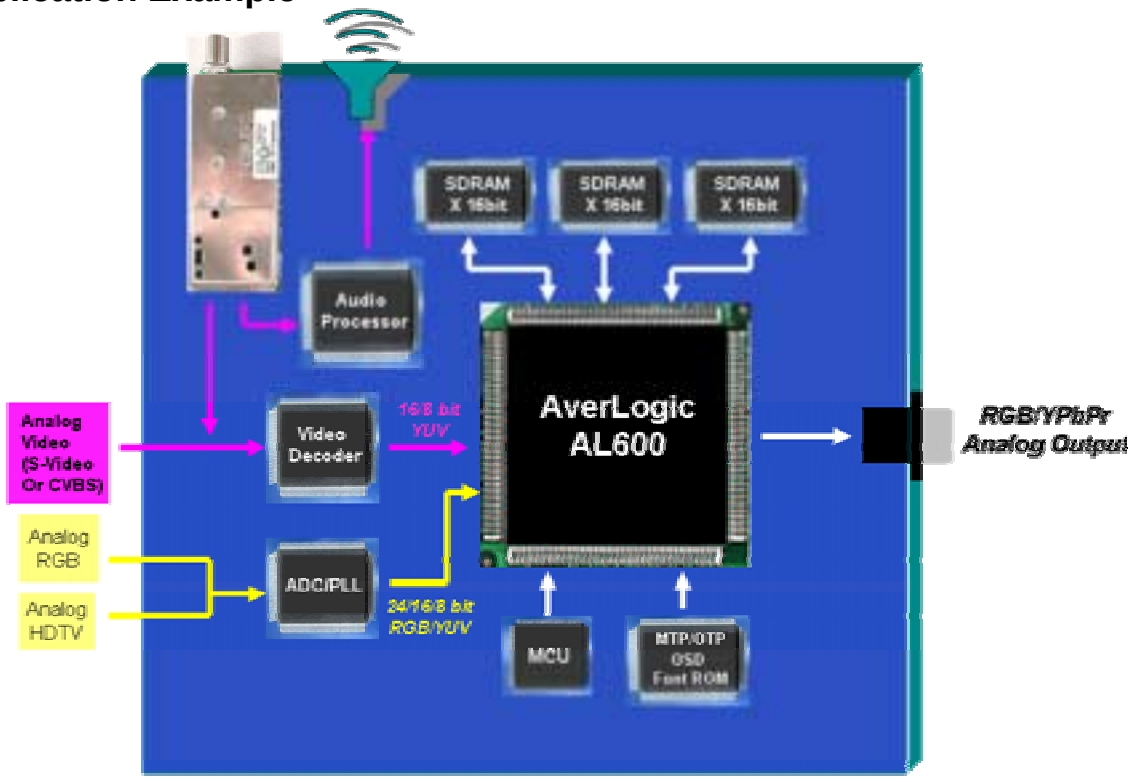
Operating Power:

- 2.5V core and 3.3V I/O power supplies with 5V input tolerant

Package:

- 208-pin PQFP

Application Example



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