2D Scaler IP Core

Documents & Downloads
- User Manuals

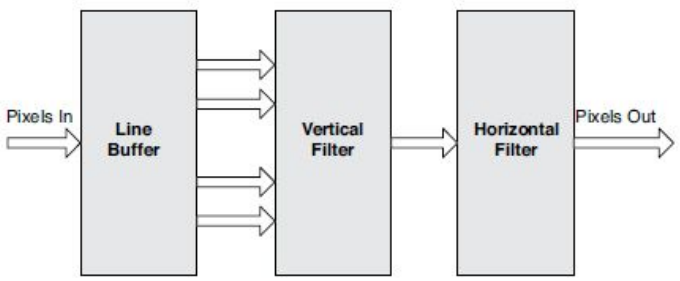
See Also
- Gamma Corrector

Overview

The **2D Scaler IP core** converts input video frames of one size to output video frames of a different size. Its flexible architecture supports a wide variety of scaling algorithms. The highly-configurable design takes advantage of the embedded DSP blocks available in Lattice FPGAs. A simple I/O handshake makes the core suitable for either streaming video or bursty input video data. In-system input and output frame size update is possible on a frame basis.

Features

- Support for multi-color plane (RGB and YCbCr4:4:4), serial filtering
- Dynamic input and output frame size updating
- Supports multi-scaling algorithms
- Configurable number of filter taps for Lanczos coefficient set
- Configurable number of phases for Bicubic, Mitchell and Lanczos coefficient sets
- Configurable pixel data width
- Configurable coefficient width
- Configurable parameter bus width
- Selectable memory type for line buffer and coefficient memories
- Option for sharing vertical and horizontal filter coefficient memories



Performance and Resource Utilization

LatticeECP3[1]

Max Input Frame Size	Max Output Frame Size	Color Panes	Dynamic	Taps	Pixel Width	Coeff Width	Registers	LUTs	Slices	EBRs	9x9 Multipliers	f_{MAX}
1280x720	720x576	1	No	4x4	8	9	726	941	679	4	8	223
720x576	1280x720	1	No	6x6	8	9	928	1194	831	4	12	229
1280x720	1920x1080	3	Yes	4x4	8	12	1162	1639	1173	8	16	238

1. Performance and utilization data are generated targeting a LFE3-35EA-8FN484C device using Lattice Diamond 1.1 and Synplify Pro D-2010.03L-SP1 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeECP3 family.

LatticeECP2M/S[1]

Max Input Frame Size	Max Output Frame Size	Color Panes	Dynamic	Taps	Pixel Width	Coeff Width	Registers	LUTs	Slices	EBRs	9x9 Multipliers	f_{MAX}
1280x720	720x576	1	No	4x4	8	9	716	903	670	4	8	211
720x576	1280x720	1	No	6x6	8	9	927	1170	842	4	12	205
1280x720	1920x1080	3	Yes	4x4	8	12	1165	1584	1164	8	16	252

1. Performance and utilization data are generated targeting a LFE2M20E-7F484C device using Lattice Diamond 1.1 and Synplify Pro D-2010.03L-SP1 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeECP2M family.

LatticeECP2/S[1]

Max Input Frame Size	Max Output Frame Size	Color Panes	Dynamic	Taps	Pixel Width	Coeff Width	Registers	LUTs	Slices	EBRs	9x9 Multipliers	f_{MAX}
1280x720	720x576	1	No	4x4	8	9	716	903	670	4	8	209

720x576	1280x720	1	No	6x6	8	9	927	1170	842	4	12	217
1280x720	1920x1080	3	Yes	4x4	8	12	1165	1584	1164	8	16	255

1. Performance and utilization data are generated targeting a LFE2-20E-7F484C device using Lattice Diamond 1.1 and Synplify Pro D-2010.03L-SP1 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeECP2 family.

LatticeXP2[1]

Max Input Frame Size	Max Output Frame Size	Color Panes	Dynamic	Taps	Pixel Width	Coeff Width	Registers	LUTs	Slices	EBRs	9x9 Multipliers	f_{MAX}
1280x720	720x576	1	No	4x4	8	9	716	903	670	4	8	194
720x576	1280x720	1	No	6x6	8	9	927	1170	842	4	12	205
1280x720	1920x1080	3	Yes	4x4	8	12	1165	1584	1164	8	16	237

1. Performance and utilization data are generated targeting a LFXP2-17E-7F484C device using Lattice Diamond 1.1 and Synplify Pro D-2010.03L-SP1 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeXP2 family.

Ordering Information

Family	Part Number
LatticeECP3	SCALER-E3-U1
LatticeECP2M/S	SCALER-PM-U1
LatticeECP2/S	SCALER-P2-U1
LatticeXP2	SCALER-X2-U1

IP Version: 1.0
Evaluate: To download a full evaluation version of this IP, go to the IPexpress tool and click the IP Server button in the toolbar. All LatticeCORE IP cores and modules available for download will be visible. For more information on viewing/downloading IP please read the **IP Express Quick Start Guide**.
Purchase: To find out how to purchase the IP Core, please contact your **local Lattice Sales Office**.