

JPEG 2000 solutions

Overcoming challenges through smart design



- Support for untiled 1080p and 4K images
- High performance across a broad range of JPEG 2000 options
- Built for high-speed applications
- Cost effective single chip solutions
- Minimized obsolescence risks

BARCO

Visibly yours



From IP core to board

- Encoder + decoder IP cores (ASIC, FPGA)
- Reference design
- Acceleration boards
- Customization capabilities

Barco Silex is a wholly-owned subsidiary of Barco, the 3,500-employee global technology company that specializes in professional visualization products.

As such, it has complete access to the resources, skills and expertise of Barco's worldwide network of research, development and support services.

Barco Silex

An undisputed center of excellence for JPEG 2000 solutions

Barco Silex is an acknowledged center of excellence for micro-electronics design. Over recent years, it has developed a comprehensive range of proven and highly flexible JPEG 2000 encoder and decoder solutions, including IP cores (both for ASIC and FPGA), reference designs, and acceleration boards.

The company's leadership in custom electronics design began back in 1991 and since that time Barco Silex

has acquired unique expertise in ASIC, FPGA, DSP and BOARD technologies. It is through drawing on this heritage that today's design team has produced a comprehensive range of world-beating JPEG 2000 solutions.

This latest generation of Barco Silex JPEG 2000 solutions comprises remarkably flexible, high-end products that can more than meet the requirements of demanding applications such as acquisition,

production, wireless video, broadcast, and digital cinema. And these deliver real-time coding of multiple high-resolution channels – in spite of being both compact and affordable.

Best of all, the people at Barco Silex offer unrivalled customization services, and flexible and continuing support that can last throughout the lifecycle of every product.

A JPEG 2000 solution for every JPEG 2000 challenge

JPEG 2000 IP cores

We at Barco Silex have developed a range of JPEG 2000 cores suitable for every performance intensive application. Those remarkably flexible cores have already been proven in high-end market environments, and support multi-channel **DCI 2K and 4K, HD 1080i and 1080p**.

We have architected our latest generation of cores to provide the highest standards of performance quality, flexibility, speed and compactness.

- **Quality:** support of untiled images for 1080p and 4K.
- **Flexibility:** support for the widest spectrum of JPEG 2000 options, including configurable frame size, and software-based user control across all parameters.
- **Speed:** Barco Silex actively targets the fastest applications where tens or hundreds of millions of samples per second are processed.
- **Compactness:** cost-effective, single-chip solutions with limited pin counts.

Barco Silex cores are not restricted to a single device type. They can optimize **FPGA, Structured ASIC** or fully customized ASIC technologies.

JPEG 2000 IP cores

- DCI 2K, DCI 4K, HD 1080i, HD 1080p
- FPGA, ASIC, structured ASIC
- High-quality
- Flexible, fast, compact
- Encoders and decoders

JPEG 2000 ASIC

We have been designing ASICs since 1991 and have worked with many foundries all over the world. This has brought us an acknowledged leadership in the field that many of our **ASIC JPEG 2000 solution** customers find valuable. We offer a completely customized ASIC flow with full JPEG 2000 integration delivered as prototypes. Naturally, we can also manage production, on request.

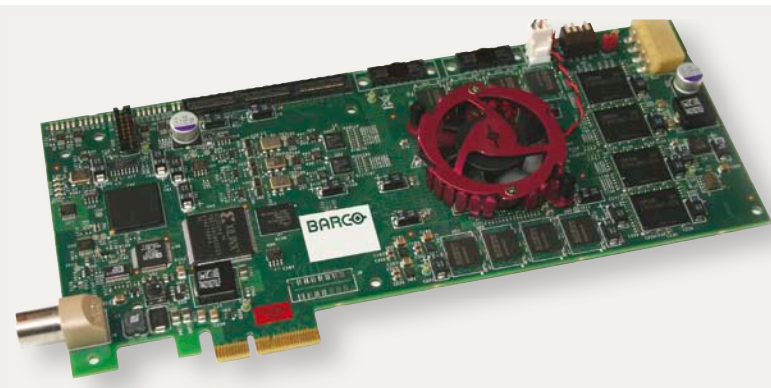
Our engineers provide expert advice on the most appropriate solution for each customer. For example, someone



requiring low to medium volumes would normally find a **structured ASIC** product, with its low entry costs, most cost effective. Meanwhile, we would usually advise a customer with a requirement for medium to high volumes to opt for a **standard cell ASIC** solution, which has a low unit cost.

The possibility of any standard IC becoming obsolete is an ever-present risk. However, that risk can be managed by conversion to technologies that carry long-term support. Barco Silex has





extensive experience in providing end of life solutions for discontinued ASIC/ICs. Moreover, the company's solid history is your best guarantee for reliable and enduring solutions.

JPEG 2000 ASIC

- Custom integrated solution
- Low entry cost structured ASIC
- Low unit price standard cell

JPEG 2000 DCPB-2000 Boards

The **DCPB-2000** is a PCI-Express acceleration board family, which performs JPEG 2000 compression and decompression. It is capable of processing HD 1080p60 and DCI 2K streams in real time.

Simply by plugging a member of our **DCPB-2000** product family into a PC one achieves tremendous acceleration in the JPEG 2000 processing flow. Indeed, one can easily reach real-time coding of very high resolution pictures, such as 2K digital cinema frames or 1080p HD pictures.

Making no compromise on quality, the DCPB-2000 family is able to encode and decode untiled images at resolutions up to 1080p and DCI formats up to 4K. Even in such a demanding environment, no tile effects appear and very high standards of quality are preserved. Moreover, the DCPB-2000 family features a unique rate allocation module, which can be configured in constant bitrate or constant quality mode. So the user can generate high-quality JPEG 2000 codestreams at various bitrates.

Because they are so compact, DCPB-2000 boards make an excellent alternative to PC clusters. Although they offer a real-time encoding and decoding capability in a PCIe form factor, they are built on FPGA technology, which provides the added advantages of flexibility and upgradeability, along with a lower risk of obsolescence.

The DCPB-2000 can be used for a wide variety of applications such as acquisition, production, archiving, mastering and contribution networks.

Features

JPEG 2000 IP Cores

Reference	Core
BA110	High-Definition Video/Digital Cinema JPEG 2000 encoder (HD/DCI)
	Complete JPEG 2000 encoding solution for high-end video storage and transmissions and digital cinema
	From pixels to j2c codestream
	Flexible resolutions, including full 2K and 4K, 1080p and 1080i, 720p, 480i XYZ, RGB, YUV (4:4:4 or 4:2:2) color spaces Up to 12 bits per sample Flexible optimal rate allocation
BA109	High-Definition Video/Digital Cinema JPEG 2000 decoder (HD/DCI)
	Complete JPEG 2000 decoding solution for high-end video storage and transmissions and digital cinema
	From j2c codestream to pixels
	Flexible resolutions, including full 2K and 4K, 1080p and 1080i, 720p, 480i XYZ, RGB, YUV (4:4:4 or 4:2:2) color spaces Up to 12 bits per sample

JPEG 2000 Boards

Reference	Board
DCPB-2100	Digital Cinema JPEG 2000 encoder board
	PCI-Express acceleration board for compression of digital cinema content
	From RGB/XYZ samples to DCI-compliant j2c codestream
	Single tile images up to DCI 4K Flexible optimal rate allocation Windows SDK, including drivers and API
DCPB-2140	Digital Cinema JPEG 2000 decoder board
	PCI-Express acceleration board for decompression of digital cinema content
	From DCI-compliant j2c codestream to RGB/XYZ samples
	Single tile images up to DCI 4K Windows SDK, including drivers and API
DCPB-2120	High-Definition JPEG 2000 encoder board
	PCI-Express acceleration board for compression of broadcast content
	From YCbCr 4:2:2 samples to j2c codestream
	Single tile images up to 1080p Multi-stream capability Flexible optimal rate allocation Windows SDK, including drivers and API
DCPB-2160	High-Definition JPEG 2000 decoder board
	PCI-Express acceleration board for decompression of broadcast content
	From j2c codestream to YCbCr 4:2:2 samples
	Single tile images up to 1080p Multi-stream capability Windows SDK, including drivers and API

Barco JPEG 2000 solutions

Barco is a recognized industry leader with many years' experience in all aspects of display technology. It has established reputations both for innovation and excellence, and consistently delivers high-grade solutions and design services across a wide spectrum of applications. The company's unique blend of extensive experience and unrivalled competences

makes Barco the partner of choice for custom imaging projects.

From concept development to warehouse delivery and beyond, Barco offers a comprehensive range of services that can be customized to complement each customer's needs and in-house skills.

Barco's expertise is supported by a world-wide network of research, development and support services. And the company's partnership approach is reinforced by its global sales organization, which provides customers with regional support people who understand both their languages and their individual requirements.



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