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## GO7007SB Streaming Media Encoder

The WISchip GO7007SB is designed for devices, such as DVRs, PVRs, or STBs, and for streaming IP solutions over Ethernet, such as video conferencing or surveillance. It delivers up to full D1 (720x480) resolution streaming video at 30 fps.

The GO7007SB encodes CCIR 601/656 or RGB Bayer input into MPEG-4/2/1, MJPEG, or H.263 formats.

For irregular HSYNCH video sources, the GO7007SB delivers A/V synchronization with error resiliency.

## Optimizing Encoding Performance

The GO7007SB can achieve full resolution with just 4MB of standard PC100 SDRAM, reducing system costs. It features an on-chip image processor, SDRAM and USB controllers, I<sup>2</sup>C, I<sup>2</sup>S and parallel (HPI) interfaces.

WISchip's uniquely flexible encoder architecture accommodates several ISO/ITU video standards. It provides a glueless interface to industry-standard CMOS and CCD image sensors via RGB Bayer input.

## Video Input

- RGB Bayer 10-bit sensor input
- CCIR-601 or CCIR-656 YUV (8-bit) 4:2:2 progressive or interlace input
- Maximum input size:
  - NTSC: 720x480 @ 30 fps or 720x240 @ 60 fps
  - PAL: 720x576 @ 25 fps or 720x288 @ 50 fps
- Resolution from 64x64 to 720x576 (16-pixel increments)
- Frame rate: 1 to 30 fps (full-D1) or 120 fps (CIF)
- Improved error resiliency for irregular HSYNCH and VSYNC video sources
- OSD support
- VBI support
- Motion detection
- Decoded VBC data pass through



## Audio Input/Output

- I<sup>2</sup>S interface
- Advanced AC97 slave interface, supports variable sampling rate
- PCM/ADPCM audio data stream output
- Audio data fingerprint is embedded in video stream for S/W synchronization

## Video and Image Processing

- Adaptive RGB Bayer reconstruction
- Color conversion and correction
- RGB gain and offset
- Per color gamma correction (RGB)
- AE and AWB statistics collection for camera control functions
- Independent gain and offset control in RGB channel
- 2:1 scaling
- Cropping
- Contrast, brightness, and hue control (RGB)
- Motion adaptive de-interlacing; enhanced de-interlacing functions
- Inverse telecine
- Motion adaptive temporal filter
- 5-tap, user-programmable filters (RGB)
- Auto exposure/auto white balance statistics (RGB)
- RGB to YCbCr conversion (RGB) video compression

## Video Compression

- WIS patent-pending Motion Estimation Engine (search range +/-127 horizontal PEL and +/-63 vertical PEL with half-PEL accuracy)
- WIS patent-pending high precision DCT/IDCT and quantization implementation
- Advanced scene change detection and adjustable GOP size
- 48 MHz to 96 MHz (depending on resolution)
- Programmable GOP structures (I, IP, IBBP) and sizes
- WIS patent-pending advanced MPEG bit-rate control (CBR/VBR) from 1 Kbps to 20 Mbps

## Video Quality and Features

- DVD quality full-D1 video from 2 Mbps
- High quality from QCIF video for low-bandwidth communication (from 40 Kbps)
- 2-hour 640x352 movie on one 650 MB CD (average PSNR 40 db)
- Dynamically adjustable bit rate and frame rate to fit variable bandwidths (for Internet communication applications)
- Drivers, SDKs, and related software including decoding, post processing, and Internet-ready software (sample applications available)
- Features and parameters are configurable from host (e.g., PC) or embedded
- Internal algorithms of scene change and bit-rate control are upgradeable
- Motion detection • Windows 2000® or XP®
- Linux® • Microsoft DirectShow®

## Video Output Formats

- MPEG-4 Simple Profile @ L3 plus B-frame support, Microsoft®, DivX®, and Sigma Design® compatible, progressive, and interlace
- MPEG-2 MP @ ML, progressive, and interlace
- MPEG-1 • H.263 • Motion JPEG

## Output and Control Interface

- Built-in USB 1.1 device controller
- Supports USB 2.0 through external controller
- 8 or 16-bit address/data multiplexed or non-multiplexed host parallel interface, asynchronous or synchronous capable
- GPIO interface (6) • SPI (3 wire) • I<sup>2</sup>S

## Specifications

- 208-pin PQFP (Part # GO7007SB-UAQX01)
- 196-ball LBGA (Part # GO7007SB-UABX01)
- 3.3V, 0.18um, 5-layer metal, single-poly process
- 4MB or 8MB 32-bit PC100 external SDRAM
- Power consumption: 740mW @ D1 resolution, 30 fps

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