

## Video Interface Box



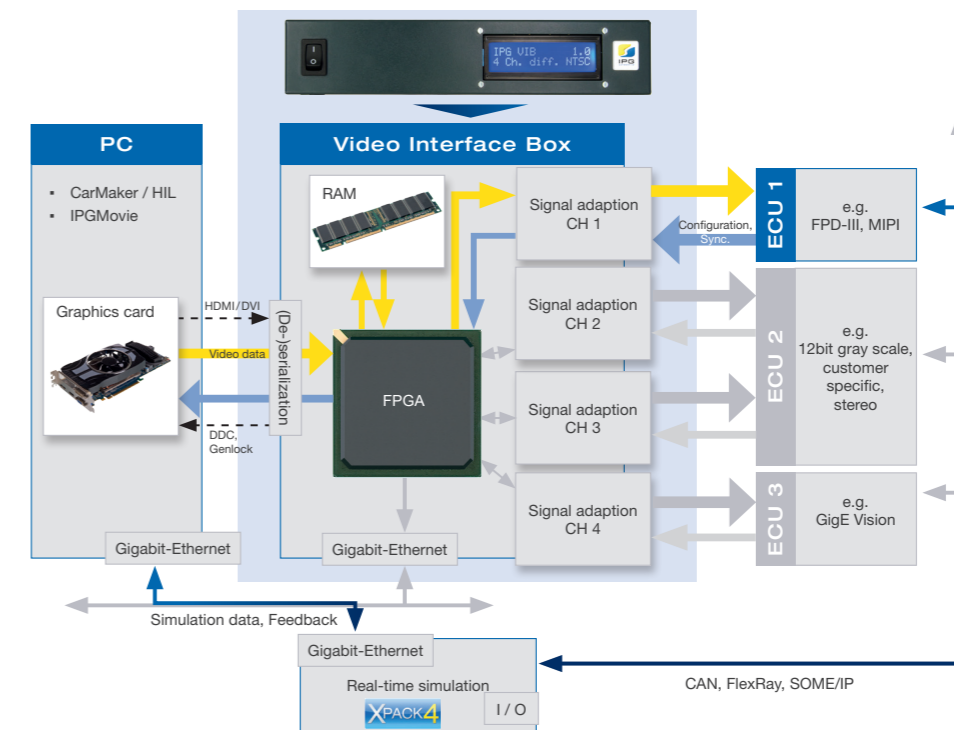
### Features

- Direct feeding of video data into the camera ECU interface
- Contrast range > 8 bits per pixel
- User-definable resolution per emulation, e.g. 4096 x 2034 pixels
- Depending on contrast range and frame rate; all channels in total limited to 7.44 Gbit/s per VIB unit
- Support of up to four cameras (channels) per Video Interface Box module
- Feedback channels:
  - For synchronization, configuration und control between camera emulation und ECU
  - For synchronization between video data source and camera emulation
- Various standardized interfaces available, e.g. FPD-III, MIPI, Camera Serial Interface, FBAS (PAL, NTSC), HDMI / DVI
- FPGA-based hardware facilitates implementation of further interfaces and functional ranges
- Optimized for Xpack4 and CarMaker/HIL

### Use Cases

- Closed-loop testing of camera based ADAS ECUs
- Testing of camera systems with several lenses
- Testing of camera systems with extreme lens aperture angles (e.g. fisheye)
- Vehicle-in-the-Loop tests

### Block Diagram



### Technical Data

<b>Input</b>	<ul style="list-style-type: none"> <li>• DVI @ 7,44 Gbit/s</li> <li>• Up to 4 channels per unit</li> </ul>
<b>Output</b>	<ul style="list-style-type: none"> <li>• Up to 7,44 Gbit/s (product of: number of channels x resolution per channel x contrast range per pixel x frames per second)</li> <li>• The limit can be exceeded by use of additional VIB units</li> <li>• FPD Link I/II/III</li> <li>• Additional DVI-port (e.g. for verification)</li> </ul>
<b>Interfaces</b>	<ul style="list-style-type: none"> <li>• NTSC</li> <li>• DVP: Parallel data lines (e.g. 12 bit + VSYNC + HSYNC + Clock [+I<sup>2</sup>C])</li> <li>• LVDS: Serial connections via LVDS-channels (e.g. Camera Serial Interface)</li> </ul>
<b>FPGA</b>	<ul style="list-style-type: none"> <li>• Distribution of IPGMovie tiles to channels</li> <li>• Minimized buffer of data streams</li> <li>• Insertion of "embedded data" and "statistic data"</li> <li>• Response to I<sup>2</sup>C requests; registry entries for emulated imagers</li> <li>• Feedback channel (exposure control) to IPGMovie</li> <li>• Tone-mapping</li> <li>• Timing synchronization between IPGMovie and emulated imager</li> </ul>
<b>Emulations</b>	<ul style="list-style-type: none"> <li>• NTSC (e.g. Aptina ASX340)</li> <li>• OmniVision (e.g. OV10642)</li> <li>• Aptina (e.g. AR0132)</li> </ul>
<b>Optics</b>	<ul style="list-style-type: none"> <li>• Realization of all optical path effects in IPGMovie (lenses, color filters, etc.)</li> </ul>
<b>Latency</b>	<ul style="list-style-type: none"> <li>• Less than 5 μs without buffering</li> </ul>

### Order Information

<b>Order Number</b>	<ul style="list-style-type: none"> <li>• VIB-NTSC</li> <li>• VIB-LVDS1</li> <li>• VIB-DVP</li> </ul>
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