



## DMA900/DMA3600 Technology

Advanced image data transfer for high-speed cameras over a single DMA channel



Frame grabbers are the connection between cameras and the PC memory system. Image data are acquired over the camera interface, processed on the FPGA in parallel to the camera speed and stored in the on-board memory of the frame grabber. By a modern and efficient scatter-gather technology, the image data is transferred via the bus system and stored into the RAM of the host PC.

In most cases, the data input rate matches the output data rate. If image data are pre-processed, the amount of data can be reduced as well as be enlarged. A measurement application, a JPEG compression or a binarization are examples of a reduction. A reconstruction of a color image from a monochromatic CFA camera (Bayer filter), however, will triple the amount of data. If the image data can be transferred over a single DMA channel into the PC memory, the host CPU is unloaded from additional image reconstruction tasks. The provision of an optimized, high-performance data transfer is base for the subsequent software-based image processing.

### Camera Link

- 1 camera FULL Config., 8-tap, 8-tap monochrome 85 MHz \* 680 MB / s
- 1 camera FULL Config., 10-tap, tap \* 85 monochrome 10-MHz 850 MB / s
- 1 camera BASE config., 3-tap, 3-color reconstruction CFA Taps \* 3 \* 85 MHz channels 765 Mbytes / s

### GigE Vision

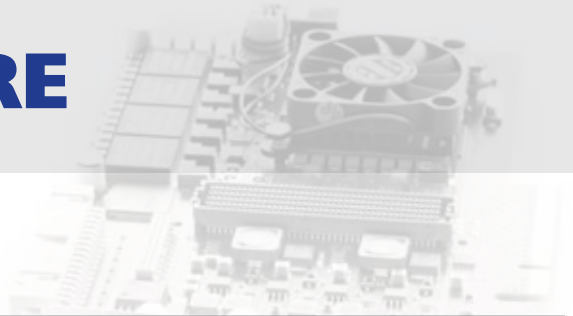
- 2 cameras, color reconstruction CFA 2 \* 100 MB / s \* 3 channels 600 Mbytes / s
- 3 cameras, color reconstruction CFA 3 \* 100 MB / s \* 3 channels 900 MB / s

DMA3600 and DMA900 technology is a development by Silicon Software. It optimizes the data transfer over the PCI Express bus. This enhancement is achieved with the DMA900 optimization in pure data transfer mode with a bandwidth of 900 MBytes/s. In practice, applications will achieve a transfer rate of 850 MBytes/s, depending on the overall PC system performance. This allows the complete image data transfer of Camera Link FULL configuration cameras over the frame grabber into the PC memory. Results for the DMA3600 transfer are appropriate. This benchmark correlates to the bandwidth requirements of CoaXPress and Camera Link HS, but still offers considerable reserves for image processing with additional image data transfer or subsequent extensions of bandwidth requirements of both standards.



Any information without obligation. Technical specifications and scope of delivery are liability-free and valid until revocation. Mistakes are excepted.





Available or planned models:

Standard / Frame Grabber	Description
DMA3600 Technology	<b>DMA3600</b>
CoaXPress	microEnable 5 based on PCIe x8 (Gen 2)
Camera Link HS	microEnable 5 based on PCIe x8 (Gen 2)
DMA900 Technology	<b>DMA900</b>
Camera Link	microEnable IV based on PCIe x4
microEnable IV AD4-CL	2-channels high-performance image acquisition card
microEnable IV AD4-PoCL	2-channels high-performance image acquisition board with power supply for cameras PoCL
microEnable IV VD4-CL	2-channels high-performance image processing board
microEnable IV VD4-PoCL	2-channels high-performance image processing board with power supply for cameras PoCL
DMA900 Technology	<b>DMA900</b>
GigE Vision	microEnable IV based on PCIe x4 , in preparation

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