

Matrox Helios eCL/XCL

Camera Interface Application Note

BASLER A501k

August 9, 2006

Basics about the
camera

Mode of operations as
per Matrox Imaging (in
parentheses as per
camera manufacturer)

Basics about the
interface modes

Camera Descriptions

- Effective resolution: $1280 \times 1024 \times 8\text{-bit}$ @ 74 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 50 MHz pixel clock rate.

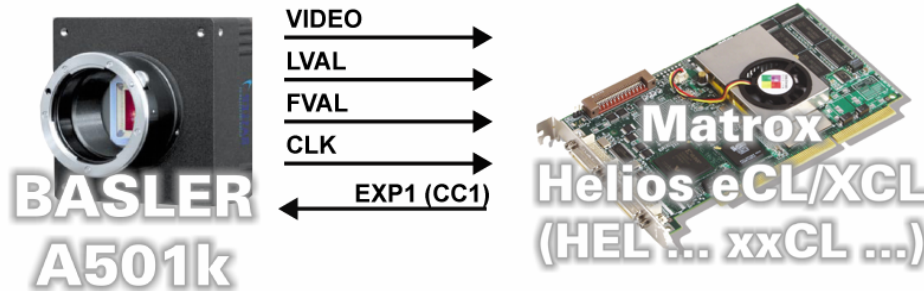
Interface Mode

- Continuous (Free-run)
- Asynchronous reset (EXSYNC, level-controlled with asynchronous timings)

Camera Interface Briefs

Mode 1: Continuous

- $1280 \times 1024 \times 8\text{-bit}$ @ 74 fps.
- $1280 \times 512 \times 8\text{-bit}$ @ 147 fps.
- Camera Link BASE interface (Dual taps).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, CLK and video signal from camera.
- DCF used: [A501K1280x1024_8bit2tapCon.DCF](#)
- DCF used: [A501K1280x512_8bit2tapCon.DCF](#)



Mode 2: Asynchronous reset

- $1280 \times 1024 \times 8\text{bit}$.
- $1280 \times 512 \times 8\text{bit}$.
- Camera Link BASE interface (Dual taps).
- Progressive scan.
- Matrox Helios eCL/XCL receiving external trigger signal.
- Matrox Helios eCL/XCL sending EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, CLK and video signal from camera.

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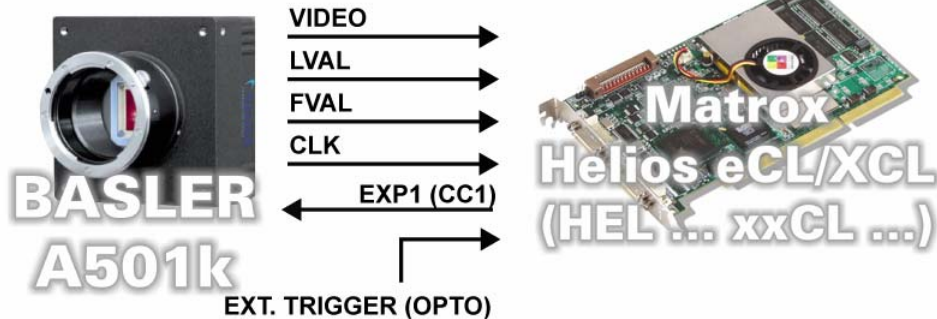
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Basics about the
interface modes

Camera Interface Briefs (cont.)

Mode 2: Asynchronous reset

- DCF used: [A501K1280x1024_8bit2tapAsync.DCF](#)
- DCF used: [A501K1280x512_8bit2tapAsync.DCF](#)



Specifics about the
interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Helios eCL/XCL receives the continuous video from the camera at 74 (full frame) or 147 fps (area of interest - AOI). The frame rate depends on the number of line included in the AOI. Refer to the camera manual for additional information.
- **Camera settings:** Refer to the camera manual for additional information.

Mode 2: Asynchronous reset

- **Frame Rate:** The frame rate is determined by the frequency of the external trigger signal and the exposure time period.
- **Exposure time:** The width (falling edge to rising edge) of the EXPOSURE1 (CC1) signal is the exposure time. The exposure time can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera settings:** Using the Camera Configuration Tool Plus (CCT+), set the exposure time controlled mode to **EXSYNC, LEVEL CONTROLLED**. Refer to the camera manual for additional information.

Cabling details for the
interface modes

Cabling Requirements

Mode 1: Continuous

- **Cable and Connection:** Standard Camera Link cable.

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*Cabling details for the
interface modes*

Cabling Requirements

Mode 2: Asynchronous reset

- **Cable and Connection:** Standard Camera Link.
- **External trigger:** External trigger should be connected to the OPTO TRIG input of the 9-pin connector (pins 7 and 2) on the External auxiliary I/O connector 1 adapter board.

EXPANDED I/O BRACKET

(9-pin connector)

		External Trigger Source	
OPTOTRIG +	07	←	SIGNAL --
OPTOTRIG -	02	←	GROUND --

The DCFs mentioned in this application note are also attached (embedded) to this PDF file – use the Adobe Reader's View File Attachment to access the DCF files. The information furnished by Matrox Electronics System, Ltd. is believed to be accurate and reliable. Please verify all interface connections with camera documentation or manual. Contact your local sales representative or Matrox Sales office or Matrox Imaging Applications at 514-822-6061 for assistance. © Matrox Electronic Systems Ltd, 2006-2011.

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