

Matrox Helios eCL/XCL

Camera Interface Application Note

BASLER avA1000-120kc

March 11, 2009

*Basics about the
camera*

Camera Descriptions

- Effective resolution: $1036 \times 1036 \times 12\text{-bit}$ @ 118 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Bayer color filter (8 or 12-bit).
- Internal sync.
- Internal or external exposure control.
- 65 MHz pixel clock rate.

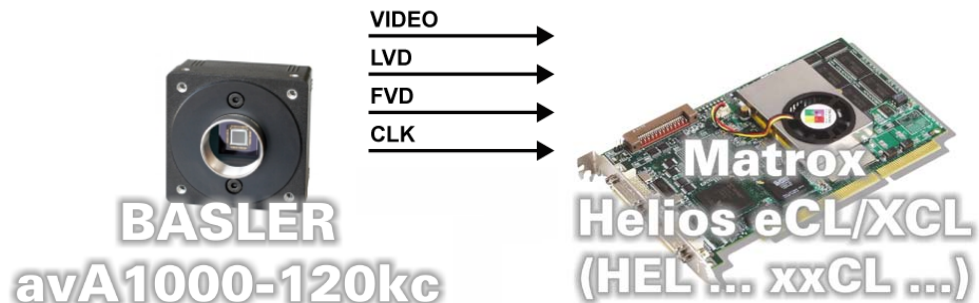
Interface Mode

- Continuous
- Pseudo-continuous
- Asynchronous reset (Trigger mode)

Camera Interface Briefs

Mode 1: Continuous

- $1036 \times 1036 \times 12\text{-bit}$ @ 118 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Bayer color filter.
- Matrox Helios eCL/XCL receiving LDV, FDV, CLK and video from camera.
- DCF used: [avA1000-120kc1036x1036_12bit2tapsCon.DCF](#)



Mode 2: Pseudo-continuous

- $1036 \times 1036 \times 12\text{-bit}$.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Bayer color filter.
- Matrox Helios eCL/XCL sending periodic EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Helios eCL/XCL receiving LDV, FDV, CLK and video from camera.

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

*Basics about the
interface modes*

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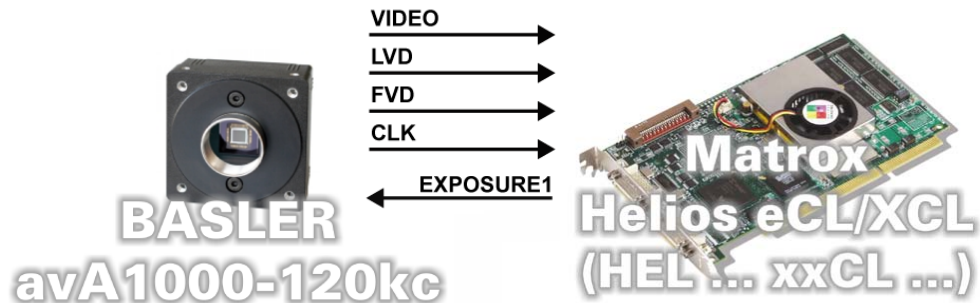
March 11, 2009

*Basics about the
interface modes*

Camera Interface Briefs (cont.)

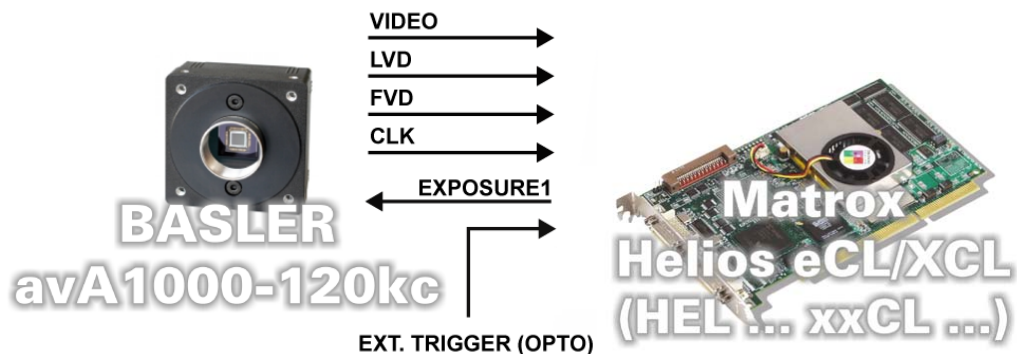
Mode 2: Pseudo-continuous

- DCF used: [avA1000-120kc1036x1036_12bit2tapsPcon.DCF](#)



Mode 3: Asynchronous reset

- 1036 × 1036 × 12-bit.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Bayer color filter.
- 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 LDV, FDV, CLK and video from camera.
- DCF used: [avA1000-120kc1036x1036_12bit2tapsAsync.DCF](#)



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*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 118 frames per second.
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual for more information.
- **Camera control settings:** Set the Basler Pylon viewer tool to **expert user level** and set the camera controls as follows:

Section	Setting
Image Format Controls	Pixel Format \ Bayer GR 12
AOI Controls	Width \ 1036 Height \ 1036
Acquisition Controls	Trigger Mode \ Off

Mode 2: Pseudo-continuous

- **Frame Rate and Exposure Time:** Frame rate is determined by the EXPOSURE1 (CC1) setting in the DCF. Changing the frequency (delay period) will control the frame rate, while changing the width (falling edge to rising edge) of EXPOSURE1 (CC1) will control the frame rate as well as exposure time when **Trigger Width** is selected for the Exposure Mode from the camera. The frame rate and exposure time can be modified using Matrox Intellicam or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Camera control settings:** Set the Basler Pylon viewer tool to **expert user level** and set the camera controls as follows:

Section	Setting
Image Format Controls	Pixel Format \ Bayer GR 12
AOI Controls	Width \ 1036 Height \ 1036
Acquisition Controls	Trigger Mode \ ON Trigger Source \ CC1 Trigger Activation \ Rising Edge Exposure Mode \ Trigger Width

Mode 3: Asynchronous reset

- **Frame Rate:** The frame rate is determined by the frequency of the external trigger signal as well as the width (falling edge to rising edge) of EXPOSURE1 (CC1).
- **Exposure time:** The width (falling edge to rising edge) of the EXPOSURE1 (CC1) signal is the exposure time when **Trigger Width** is selected for the Exposure Mode from the camera. The exposure time can be modified using Matrox Intellicam or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Camera control settings:** Refer to Mode 2: Pseudo-continuous.

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Cabling details for the
interface modes

Cabling Requirements

Modes 1 and 2: Continuous and Pseudo-continuous

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

Mode 3: Asynchronous reset

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

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, 2009-2011.

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HEL-CID-140

