

Matrox Helios eCL/XCL

Camera Interface Application Note

BASLER A504k

March 10, 2008

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: $1280 \times 1024 \times 8\text{-bit}$ @ 500 fps.
- Camera Link FULL interface (Ten taps).
- Progressive scan.
- Internal sync.
- External or internal exposure control.
- 67.58 MHz pixel clock rate.

Interface Mode

- Continuous
- Pseudo-continuous
- Asynchronous reset (EXSYNC Level-controlled)

Camera Interface Briefs

Mode 1: Continuous

- $1280 \times 1024 \times 8\text{-bit}$ @ 500 fps.
- Camera Link FULL interface (Ten taps).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [A504k_1280x1024_8bit10tapsCon.DCF](#)



VIDEO
LVAL
FVAL
PCLK



Mode 2: Pseudo-Continuous

- $1280 \times 1024 \times 8\text{-bit}$.
- Camera Link FULL interface (Ten taps).
- Progressive scan.
- Matrox Helios eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [A504k_1280x1024_8bit10tapsPcon.DCF](#)

Continued...

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Camera Interface Application Note

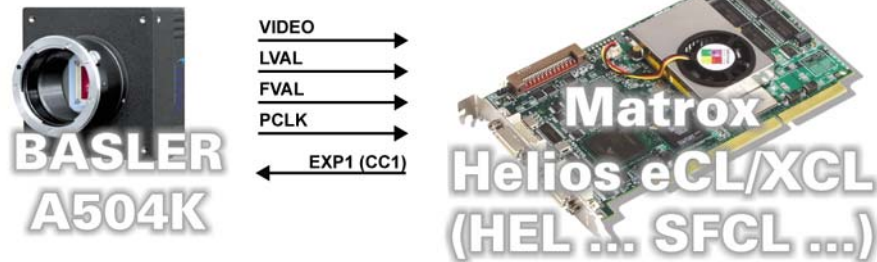
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Basics about the
interface modes

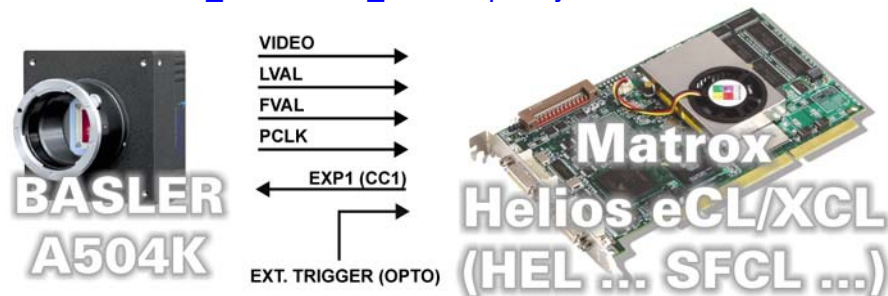
Camera Interface Briefs (cont.)

Mode 2: Pseudo-Continuous



Mode 3: Asynchronous reset

- 1280 × 1024 × 8-bit.
- Camera Link FULL interface (Ten taps).
- Progressive scan.
- Matrox Helios eCL/XCL receiving external trigger signal.
- Matrox Helios eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [A504k_1280x1024_8bit10tapsAsync.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 500 frames per second.
- **Exposure time:** Exposure time is set using the shutter speed setting in the Camera Configuration Utility. Refer to the camera manual for more information.
- **Camera control settings:** Using the Basler Camera Configuration Tool Plus (CCT+), set the camera controls as follows:

Control	Setting
Output / Video Data Output mode	10 taps 8 Bits (CL Full Configuration)
Exposure / Exposure Time Control mode	Free Run, Programmable

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Specifics about the
interface modes

Camera Interface Details (cont.)

Mode 2: Pseudo-Continuous

- **Frame rate:** The frame rate is determined by the frequency of the TIMER1 OUT (CC1) signal.
- **Exposure time:** The width (falling to rising edge) of the TIMER1 OUT (CC1) signal is the exposure time, which can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera control settings:** Using the Basler Camera Configuration Tool Plus (CCT+), set the camera controls as follows:

Control	Setting
Output / Video Data Output mode	10 taps 8 Bits (CL Full Configuration)
Exposure / Exposure Time Control mode	ExSync, Level-controlled

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** Refer to Mode 2: Pseudo-Continuous.
- **Camera control settings:** Refer to Mode 2: Pseudo-Continuous.

Cabling Requirements

Modes 1 and 2: Continuous, Pseudo-continuous

- **Cable and Connection:** Two MDR26 Camera Link cables.

Mode 3: Asynchronous reset

- **Cable and Connection:** Two MDR26 Camera Link cables.
- **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	←	LINE SIGNAL	--
OPTOTRIG -	02	←	LINE GROUND	--

Cabling details for the
interface modes

Cabling details for the
interface modes

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, 2008-2011.

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