

Matrox Helios eCL/XCL

Camera Interface Application Note

Photonfocus MV-D1024-28-CL-10

October 5, 2006

*Basics about the
camera*

Camera Descriptions

- Effective resolution: $1024 \times 1024 \times 10\text{-bit}$ @ 27 fps.
- Camera Link BASE interface (10-bit, single tap).
- Progressive scan.
- Internal sync.
- Internal exposure control.
- 28 MHz pixel clock rate.

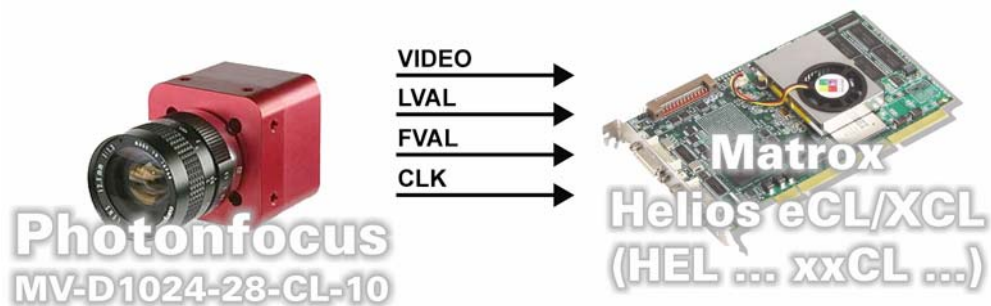
Interface Mode

- Continuous (Free Running)
- Pseudo-continuous (Trigger)
- Asynchronous reset (Trigger)

Camera Interface Briefs

Mode 1: Continuous

- $1024 \times 1024 \times 10\text{-bit}$ @ 27 fps.
- Camera Link BASE interface (10-bit, single tap).
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 28 MHz) and video from camera.
- DCF used: [MVD102428CL10_1024x1024_10bitCon.DCF](#)



Mode 2: Pseudo-continuous

- $1024 \times 1024 \times 10\text{-bit}$.
- Camera Link BASE interface (10-bit, single tap).
- Matrox Helios eCL/XCL sending EXPOSURE1 (CC1) signal to camera to initiate and control the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 28 MHz) and video from camera.
- DCF used: [MVD102428CL10_1024x1024_10bitPcon.DCF](#)

Continued...

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

*Basics about the
interface modes*

Matrox Helios eCL/XCL

Camera Interface Application Note

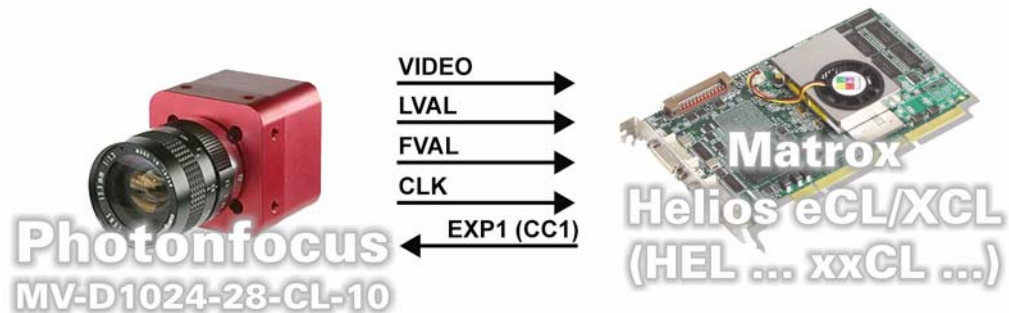
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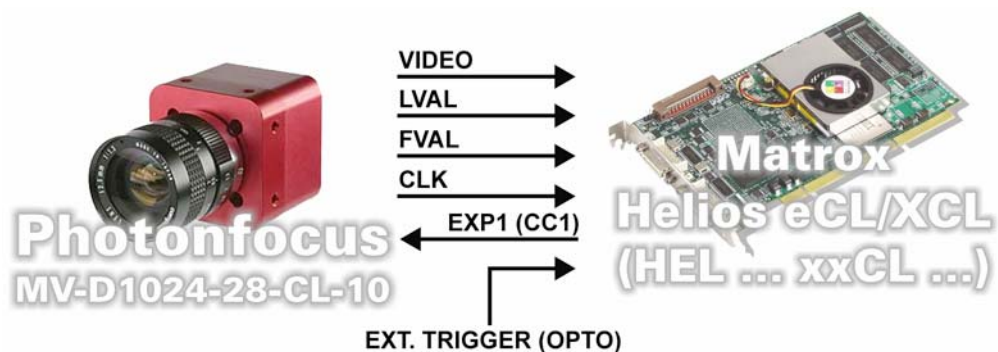
Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- 1024 × 1024 × 10-bit.
- Camera Link BASE interface (10-bit, single tap).
- Matrox Helios eCL/XCL receiving external trigger signal.
- Matrox Helios eCL/XCL sending EXPOSURE1 (CC1) signal to camera to initiate and control the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 28 MHz) and video from camera.
- DCF used: [MVD102428CL10_1024x1024_10bitAsync.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 27 frames per second. To increase the frame rate, reduce exposure time in the PhotonFocus PFRemote Camera Configuration utility (PFRemote.EXE).
- **Exposure time:** Exposure time is determined by the **Exposure Time Field** setting in the PFRemote utility. Refer to the camera manual for more information.
- **Camera settings:** The camera mode is set to the following setting in the PFRemote utility. Refer to the camera manual for more information.

Mode	Setting
Trigger	Free Running
Output	10-bit
Constant Frame Rate	unchecked

Mode 2: Pseudo-continuous

- **Frame rate:** The frame rate is determined by the frequency of the EXPOSURE1 (CC1) signal.
- **Exposure time:** The EXPOSURE1 (CC1) signal active duration (high to low) initiates and controls the camera's internal exposure time. To modify the exposure time, in Matrox Intellicam change the **Timer 1** value in the DCF or use the MIL MdigControl function. Refer to the MIL on-line Help for more information.
- **Camera settings:** The camera mode is set to the following setting in the PFRemote utility. Refer to the camera manual for more information.

Mode	Setting
Trigger	External Trigger
Output	10-bit
SYNC Pulse Active High	checked
Combined trigger/exposure	checked
Constant Frame Rate	unchecked

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*Specifics about the
interface modes*

Camera Interface Details (cont.)

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal. The period between the external trigger signals must be larger than the frame readout period and the exposure time.
- **Exposure time:** Refer to Mode 2: Pseudo-continuous.
- **Camera settings:** Refer to Mode 2: Pseudo-continuous.

*Cabling details for the
interface modes*

Cabling Requirements

Mode 1 and 2: Continuous and Pseudo-continuous

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

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 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, 2006-2011.

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