

Matrox Helios eCL/XCL

Camera Interface Application Note

PCO pco.1600

September 30, 2008

*Basics about the
camera*

Camera Descriptions

- Effective resolution: $1600 \times 1200 \times 16\text{-bit}$ @ 4.8 fps.
- Camera Link BASE interface (Single Tap).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 40 MHz pixel clock rate.

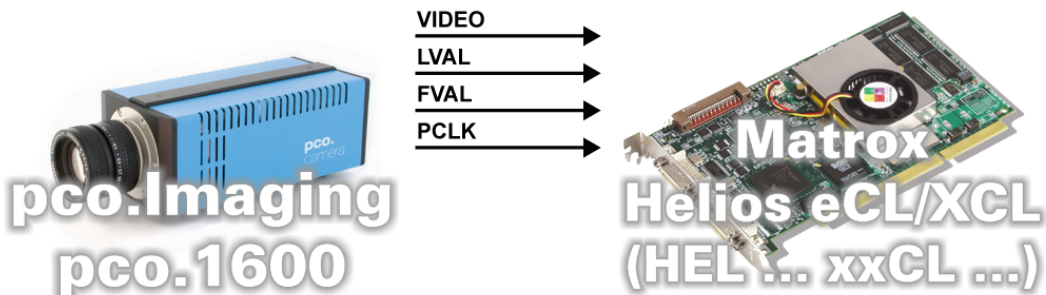
Interface Mode

- Continuous
- Pseudo-continuous (External Exp Ctrl)
- Asynchronous reset (External Exp Ctrl)

Camera Interface Briefs

Mode 1: Continuous

- $1600 \times 1200 \times 16\text{-bit}$ @ 4.8 fps.
- Camera Link BASE interface (Single Tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.
- DCF used: [pco1600x1200_16bitCon.DCF](#)



Mode 2: Pseudo-continuous

- $1600 \times 1200 \times 16\text{-bit}$.
- Camera Link BASE interface (Single Tap).
- Progressive scan.
- Matrox Helios eCL/XCL sending periodic TIMER1 OUT (CC1) signal to camera to initiate and control exposure time.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.

Continued...

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

*Basics about the
interface modes*

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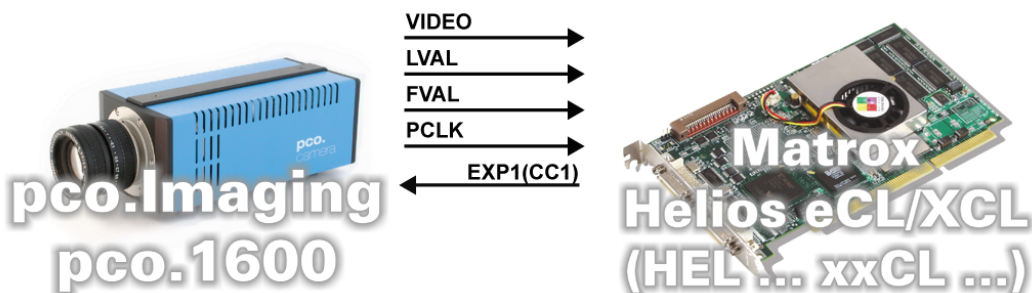
September 30, 2008

Basics about the
interface modes

Camera Interface Briefs (cont.)

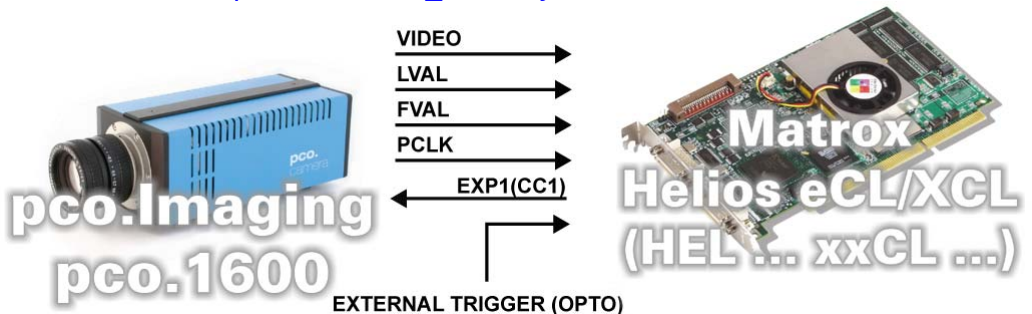
Mode 2: Pseudo-continuous

- DCF used: [pco1600x1200_16bitPcon.DCF](#)



Mode 3: Asynchronous reset

- 1600 × 1200 × 16-bit.
- Camera Link BASE interface (Single Tap).
- 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 exposure time.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.
- DCF used: [pco1600x1200_16bitAsync.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 4.8 frames per second.
- Exposure time:** Exposure time is set using the method described in the Camera Configuration Utility. Refer to the camera manual for more information.
- Camera control settings:** The camera mode is set in the Camera Configuration Utility. Refer to the camera manual for more information.

Trigger Mode	Auto Sequence Enable Continuous Output
Transfer Clock	40000000 Hz Single Tap 16 bit

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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 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:** The camera mode is set in the Camera Configuration Utility. Refer to the camera manual for more information.

Trigger Mode	External Exp Ctrl CC1 Exp Trig Enable Continuous Output
Transfer Clock	40000000 Hz Single Tap 16 bit

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** Same as in Mode 2: Pseudo-continuous.
- **Camera Configuration:** Same as in Mode 2: Pseudo-continuous.

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 on the Expanded I/O adapter bracket.

EXPANDED I/O BRACKET (9-pin connector)

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

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 Electronic Systems, 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.

Matrox Electronic Systems Ltd.

1055 St. Regis Blvd.
Dorval, Quebec H9P 2T4
Canada
Tel: (514) 685-2630
Fax: (514) 822-6273
HEL-CID-124

