

Matrox Helios eCL/XCL

Camera Interface Application Note

IMPERX IPX-VGA210L

February 16, 2009

Basics about the camera

Camera Descriptions

- Effective resolution: $640 \times 480 \times 12\text{-bit}$ @ 207 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Internal sync.
- External or internal exposure control.
- 40 MHz pixel clock rate.

Interface Mode

- Continuous
- Pseudo-continuous
- Asynchronous reset (CC Expose Control = Computer)

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

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- $640 \times 480 \times 12\text{-bit}$ @ 207 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [VGA210L_640x480_12bitCon.DCF](#)



Mode 2: Pseudo-Continuous

- $640 \times 480 \times 12\text{-bit}$.
- Camera Link BASE interface (Dual tap).
- 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: [VGA210L_640x480_12bitPcont.DCF](#)

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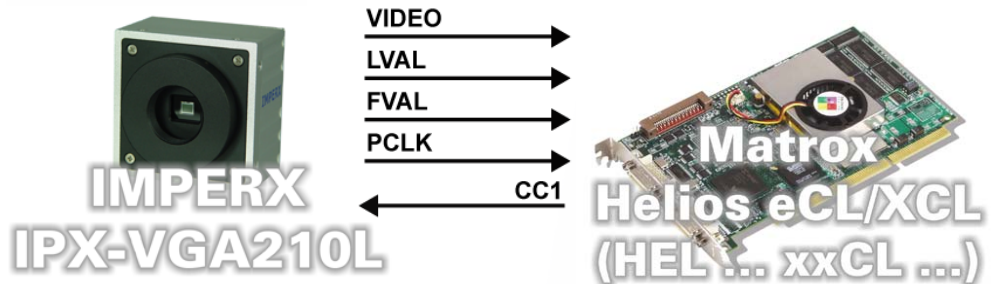
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Basics about the
interface modes

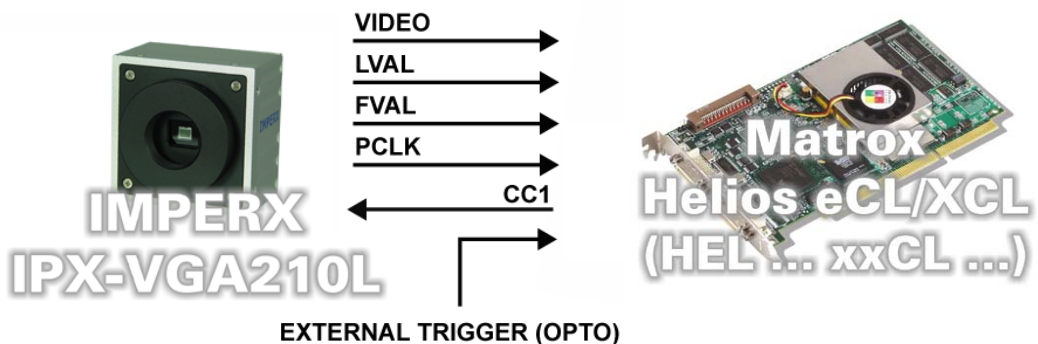
Camera Interface Briefs (cont.)

Mode 2: Pseudo-Continuous



Mode 3: Asynchronous reset

- 640 × 480 × 12-bit.
- Camera Link BASE interface (Dual 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 the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [VGA210L_640x480_12bitAsync.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 207 frames per second.
- **Exposure time:** Exposure time is set using the Imperx Camera Configuration Utility. Refer to the camera manual for commands description and usage.

Continued...

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*Specifics about
the interface modes*

Camera Interface Details (cont.)

Mode 1: Continuous

- **Camera Configuration:** The camera mode is set as follows using the Imperx Camera Configuration Utility. Refer to the camera manual for commands description and usage.

Mode	Setting
Bit Depth	12 bits
Output Mode	Dual Taps
Trigger	OFF

Mode 2: Pseudo-Continuous

- **Frame rate:** The frame rate is determined by the frequency of the TIMER1 OUT (CC1) signal.
- **Exposure time:** The exposure is determined by the active duration of TIMER1 OUT (CC1), which can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera Configuration:** The camera mode is set as follows using the Imperx Camera Configuration Utility. Refer to the camera manual for commands description and usage.

Mode	Setting
Bit Depth	12 bits
Output Mode	Dual Taps
Trigger	CC
Mode	Standard
CC Expose Control	Computer

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, Pseudo-continuous

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

*Cabling details for the
interface modes*

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*Cabling details for the
interface modes*

Cabling Requirements (cont.)

Mode 3: 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	←	LINE SIGNAL	--
OPTOTRIG -	02	←	LINE 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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