

Matrox Helios eCL/XCL

Camera Interface Application Note

IMPERX IPX-11M5-L

August 2, 2007

Basics about the
camera

Camera Descriptions

- Effective resolution: $4000 \times 2672 \times 12\text{-bit}$ @ 4.5 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Internal sync.
- External or internal exposure control.
- 28 MHz pixel clock rate.

Interface Mode

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

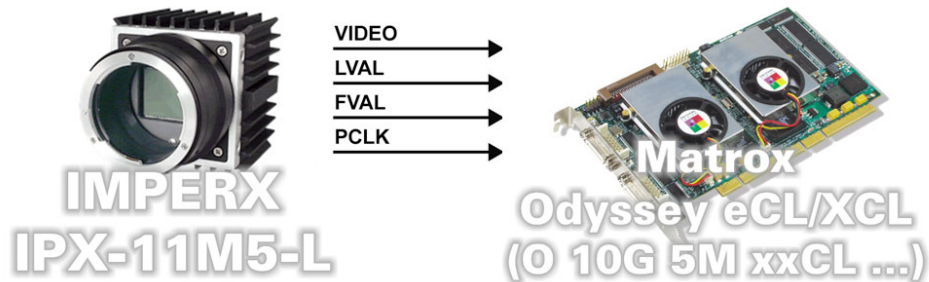
Mode of operations as
per Matrox Imaging (in
parentheses as per
camera manufacturer)

Camera Interface Briefs

Mode 1: Continuous

- $4000 \times 2672 \times 12\text{-bit}$ @ 4.5 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [IPX11M5L_4000x2672_12bitCon.DCF](#)

Basics about the
interface modes



Mode 2: Pseudo-Continuous

- $4000 \times 2672 \times 12\text{-bit}$.
- 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.

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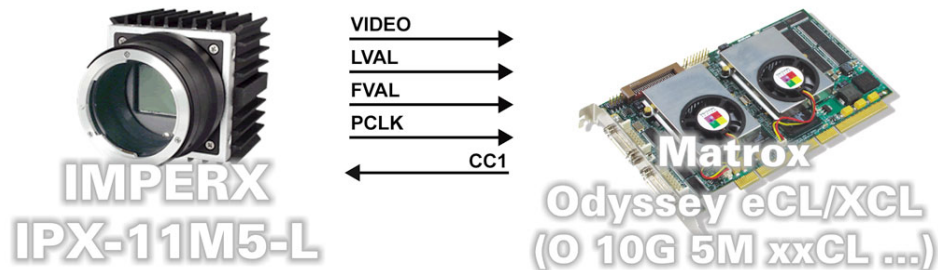
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Basics about the
interface modes

Camera Interface Briefs (cont.)

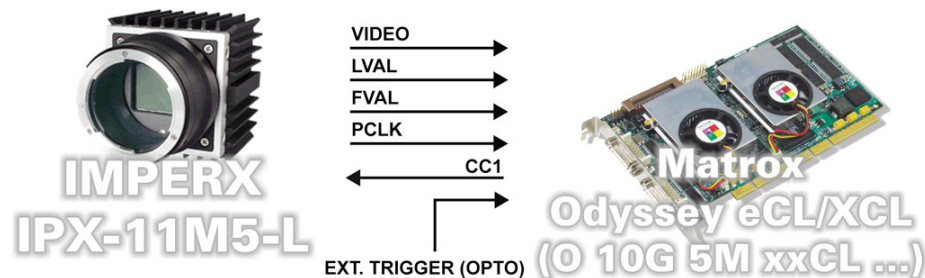
Mode 2: Pseudo-Continuous

- DCF used: [IPX11M5L_4000x2672_12bitPcont.DCF](#)



Mode 3: Asynchronous reset

- $4000 \times 2672 \times 12$ -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: [IPX11M5L_4000x2672_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 4.5 frames per second.
- **Exposure time:** Exposure time is set using the Imperx Lynx Camera Configuration Utility. Refer to the camera manual for commands description and usage.

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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 Lynx Camera Configuration Utility. Refer to the camera manual for details about the following controls and their usage.

Control	Setting
Depth	12bits
Taps	Dual
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 width (rising edge to falling 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 Configuration:** The camera mode is set as follows using the Imperx Lynx Camera Configuration Utility. Refer to the camera manual for details about the following controls and their usage.

Control	Setting
Depth	12bits
Taps	Dual
Trigger	CC
Mode	Standard
CC Exposure 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.
- **Bayer Color Filter:** Refer to *Mode 1: Continuous*.
- **Camera Configuration:** Same as in Mode 2: Pseudo-continuous.

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Cabling details for the
interface modes

Cabling Requirements

Modes 1 and 2: Continuous, Pseudo-continuous

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

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, 2007-2011.

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