

Matrox Helios eCL/XCL

Camera Interface Application Note

IMPERX 1M48

September 18, 2006

Basics about the
camera

Camera Descriptions

- Effective resolution: $1004 \times 1004 \times 10\text{-bit}$ @ 48 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Internal sync.
- External or internal exposure control.
- 40 MHz pixel clock rate.

Interface Mode

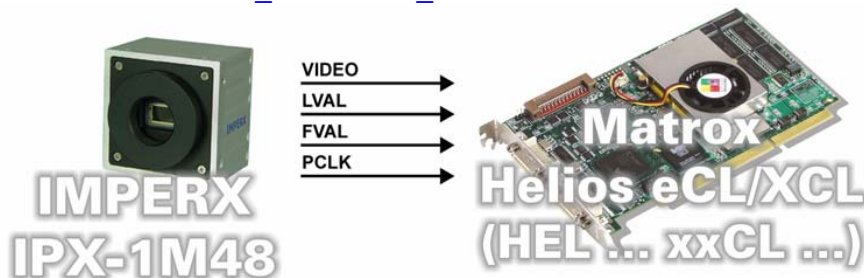
- Continuous
- Pseudo-continuous
- Asynchronous reset (Hardware trigger control, programmable exposure)

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

Camera Interface Briefs

Mode 1: Continuous

- $1004 \times 1002 \times 10\text{-bit}$ @ 48 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [1M48_1004x1002_10bitCon.DCF](#)



Mode 2: Pseudo-Continuous

- $1004 \times 1002 \times 10\text{-bit}$.
- 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: [1M48_1004x1002_10bitPcont.DCF](#)

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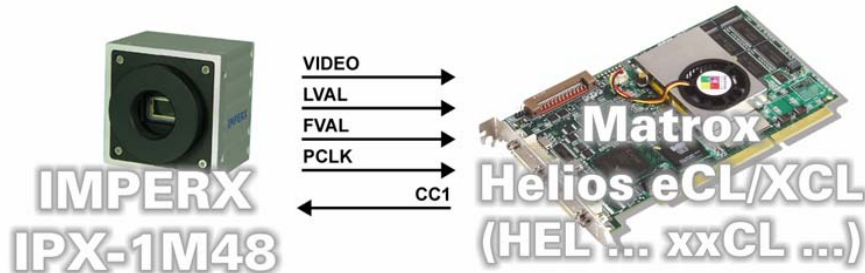
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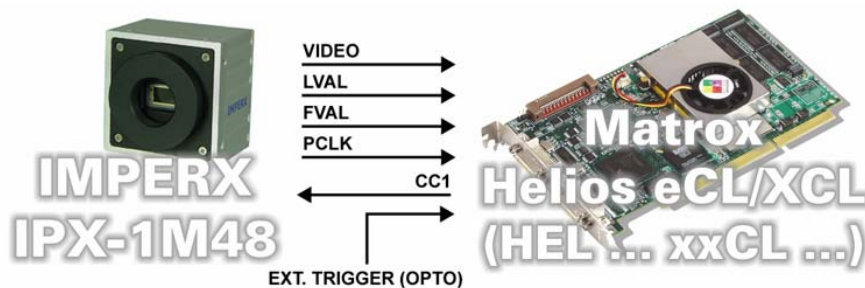
Camera Interface Briefs (cont.)

Mode 2: Pseudo-Continuous



Mode 3: Asynchronous reset

- 1004 × 1002 × 10-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: [1M48_1004x1002_10bitAsync.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 48 frames per second.
- **Exposure time:** Exposure time is set using the **Shutter Time** scrollbar setting in the Camera Configuration Utility. Refer to the camera manual for more information.
- **Camera Configuration:** The camera mode is set to **10-bit /Dual Output** in the Camera Configuration Utility. Refer to the camera manual for more information.

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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 (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 to **10-bit /Dual Output** and **CC Trigger** checkbox is enabled in the Camera Configuration Utility. Refer to the camera manual for more information.

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:** The camera mode is set to **10-bit /Dual Output** and **CC Trigger** checkbox is enabled in the Camera Configuration Utility. Refer to the camera manual for more information.

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 --

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, 2006-2011.

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