

Matrox Helios eCL/XCL

Camera Interface Application Note

JAI CV-M2

September 19, 2006

*Basics about the
camera*

Camera Descriptions

- Effective resolution: 1600 × 1200 × 10-bit @ 30 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Internal sync.
- External or internal exposure control.
- 40 MHz pixel clock rate.

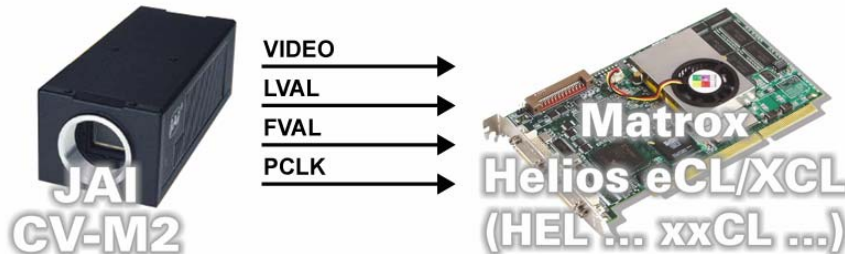
Interface Mode

- Continuous
- Pseudo-continuous (Reset Continuous Trigger)
- Asynchronous reset (Pulse Width Control)

Camera Interface Briefs

Mode 1: Continuous

- 1600 × 1200 × 10-bit @ 30 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [CVM2_1600x1200_10bitCon.DCF](#)



Mode 2: Pseudo-continuous

- 1600 × 1200 × 10-bit.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Matrox Helios eCL/XCL sending periodic TIMER1 OUT (CC1) signal to camera to initiate the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video 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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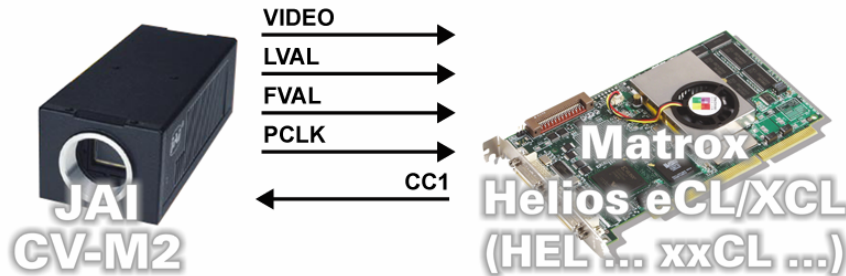
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Basics about the
interface modes

Camera Interface Briefs (cont.)

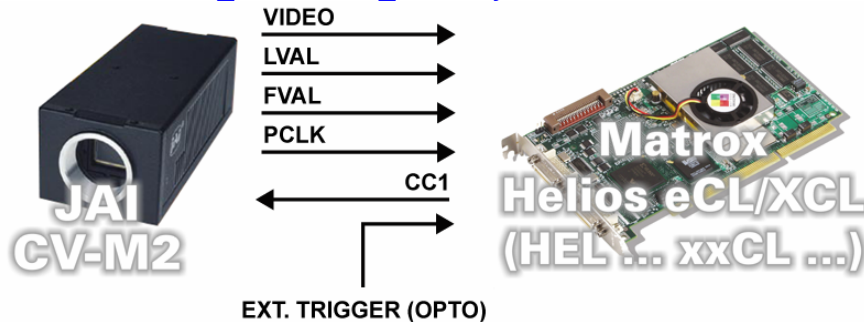
Mode 2: Pseudo-continuous

- DCF used: DCF used: [CVM2_1600x1200_10bitPCon.DCF](#)



Mode 3: Asynchronous reset

- 1600 × 1200 × 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: [CVM2_1600x1200_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 30 frames per second.
- Exposure time:** Exposure time is set in the **Shutter and Sync window** of the Camera Control Tool. 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 (CC1) signal.
- **Exposure time:** Exposure time is set using the Camera Configuration utility. Refer to the camera manual for more information.
- **Camera Control:** The camera mode is set to **Reset Continuous Trigger mode** in the Shutter and Sync window of the Camera Control Tool. 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:** The width (falling edge to rising 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 Control:** The camera mode is set to **Pulse Width Control mode** in the Shutter and Sync window of the Camera Control Tool. 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 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	←	LINE SIGNAL --
OPTOTRIG -	02	←	LINE 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 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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