

Matrox Helios eCL/XCL

Camera Interface Application Note

JAI CM-200MCL

November 8, 2007

Basics about the
camera

Camera Descriptions

- Effective resolution: $1620 \times 1236 \times 10\text{-bit}$ @ 25 fps.
- Camera Link BASE interface (Single tap).
- Progressive scan.
- Internal sync.
- Internal exposure control.
- 65 MHz pixel clock rate.

Interface Mode

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

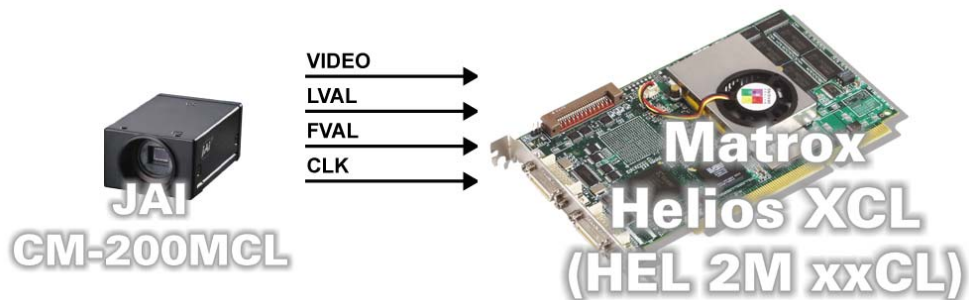
Mode of operations as
per Matrox Imaging (in
parentheses as per
camera manufacturer)

Camera Interface Briefs

Mode 1: Continuous

- $1620 \times 1236 \times 10\text{-bit}$ @ 25 fps.
- Camera Link BASE interface (Single tap).
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 65 MHz) and video from camera.
- DCF used: [CM-200MCL_1620x1236_10bitCon.DCF](#)

Basics about the
interface modes



Mode 2: Pseudo-continuous

- $1620 \times 1236 \times 10\text{-bit}$.
- Camera Link BASE interface (Single tap).
- Matrox Helios eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 65 MHz) and video from camera.
- DCF used: [CM-200MCL_1620x1236_10bitPcon.DCF](#)

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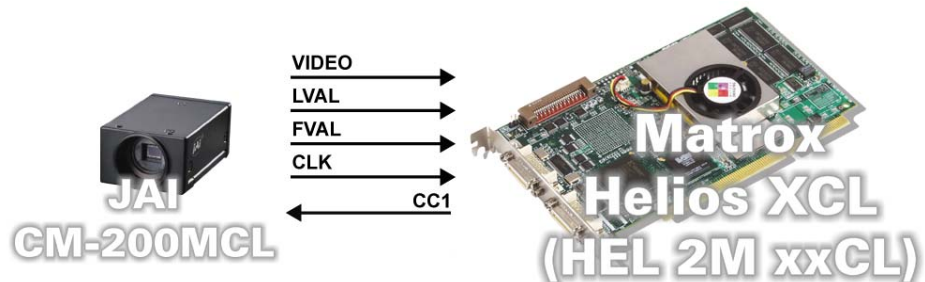
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Basics about the
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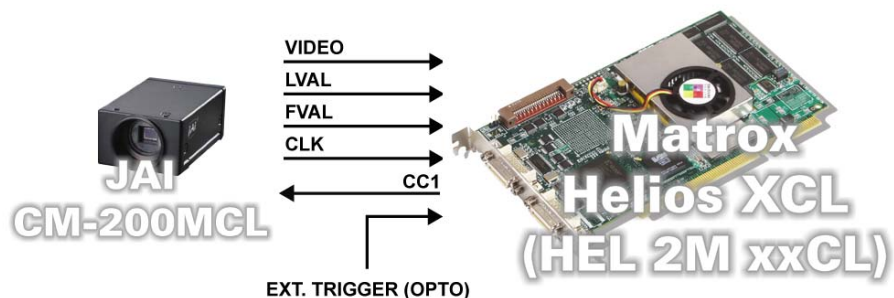
Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous Reset

- 1620 × 1236 × 10-bit.
- Camera Link BASE interface (Single tap).
- Matrox Helios eCL/XCL receiving external trigger signal.
- Matrox Helios eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 65 MHz) and video from camera.
- DCF used: [CM-200MCL_1620x1236_10bitAsync.DCF](#)



Specifics about the
interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Matrox Helios receives the continuous video from the camera at 25 frames per second.
- **Exposure time:** Exposure time is set using the integration time setting 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 1: Continuous

- **Camera control settings:** Using the JAI Camera Configuration Tool, set the camera controls as follows:

Control	Setting
Trigger Mode	Normal (Continuous)

Mode 2: Pseudo-continuous

- **Frame rate:** The frame rate is determined by the frequency of the TIMER1 OUT (CC1) signal.
- **Exposure time:** The Active Duration 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:** Using the JAI Camera Configuration Tool, set the camera controls as follows:

Control	Setting
Trigger Mode	PWC (Pulse Width Control)
Trigger Polarity	Active Low
Trigger Input	Camera Link

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal. The period between the external trigger signals must be larger than the frame readout period (40 ms) plus the exposure time.
- **Exposure time:** Refer to Mode 2: Pseudo-continuous.
- **Camera settings:** Refer to Mode 2: Pseudo-continuous.

Cabling Requirements

Mode 1 and 2: Continuous, Pseudo-continuous

- **Cable and Connection:** Mini 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:** Mini Camera Link cable.
- **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	←	SIGNAL	--
OPTOTRIG -	02	←	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.

Matrox Electronic Systems Ltd.

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

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