

Matrox Helios eCL/XCL

Camera Interface Application Note

Salvador Imaging SI-16M4

August 2, 2007

Basics about the
camera

Camera Descriptions

- Effective resolution: $4872 \times 3248 \times 12\text{-bit}$ @ 3.5 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Internal sync.
- Internal exposure control.
- 30 MHz pixel clock rate.

Interface Mode

- Continuous (Internal Trigger - Trigger D)
- Pseudo-continuous (External Trigger CC1)
- Asynchronous reset (External Trigger CC1)

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

Camera Interface Briefs

Mode 1: Continuous

- $4872 \times 3248 \times 12\text{-bit}$ @ 3.5 fps.
- Camera Link BASE interface (Dual tap).
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 30 MHz) and video from camera.
- DCF used: [SI16M4_4872x3248_12bitCon.DCF](#)

Basics about the
interface modes



Mode 2: Pseudo-continuous

- $4872 \times 3248 \times 12\text{-bit}$.
- Camera Link BASE interface (Dual 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 @ 30 MHz) and video from camera.
- DCF used: [SI16M4_4872x3248_12bitPcon.DCF](#)

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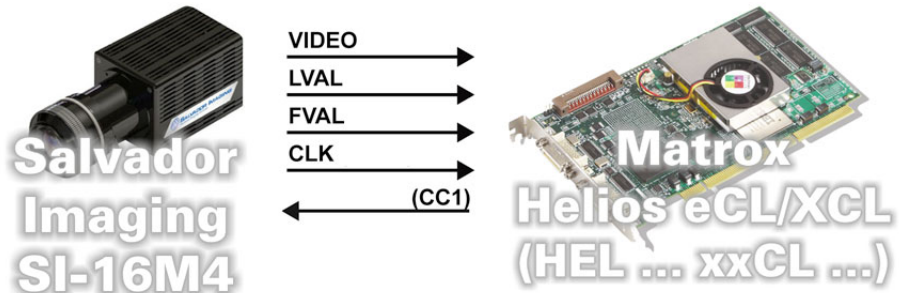
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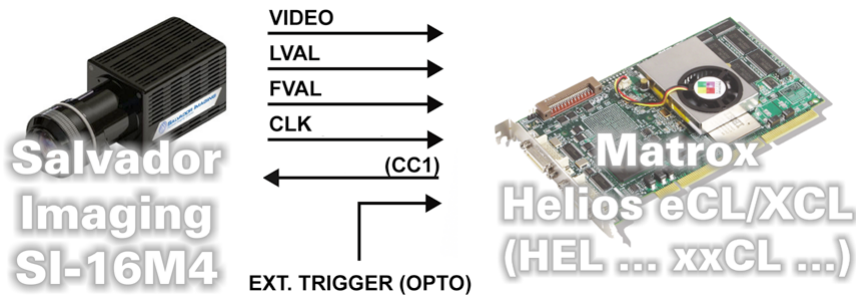
Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous Reset

- $4872 \times 3248 \times 12$ -bit.
- Camera Link BASE interface (Dual 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 @ 30 MHz) and video from camera.
- DCF used: [SI16M4_4872x3248_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 3.5 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 Salvador Imaging SalUtil utility, set the camera controls as follows:

Control	Setting
CCD Data	12 bits
Internal Frame Trigger (Trigger D)	Enable

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 Salvador Imaging SalUtil utility, set the camera controls as follows:

Control	Setting
CCD Data	12 bits
Internal Frame Trigger (Trigger D)	Disable

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 and 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.

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