

# Matrox Helios eCL/XCL

## Camera Interface Application Note

### HITACHI KP-FD202SCL

November 4, 2008

Basics about the  
camera

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

Basics about the  
interface modes

#### Camera Descriptions

- Effective resolution:  $1620 \times 1220 \times 12\text{-bit}$  @ 30 fps.
- Camera Link MEDIUM interface (RGB).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 72 MHz pixel clock rate.

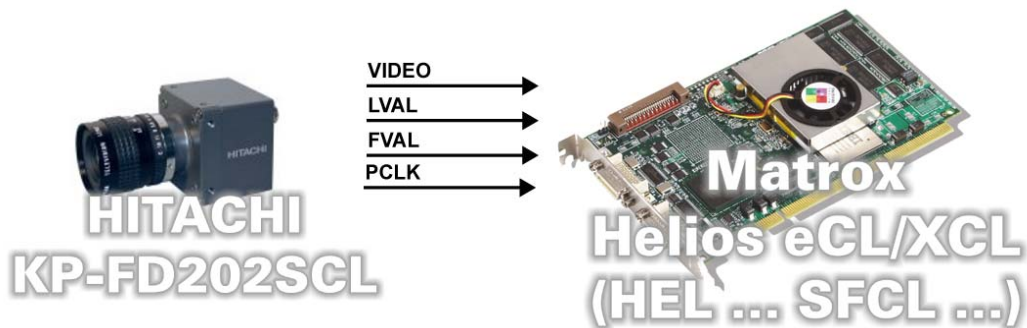
#### Interface Mode

- Continuous
- Pseudo-continuous (Trigger Mode 1Trigger)
- Asynchronous reset (Trigger Mode 1Trigger)

#### Camera Interface Briefs

##### Mode 1: Continuous

- $1620 \times 1220 \times 12\text{-bit}$  @ 30 fps.
- Camera Link MEDIUM interface (RGB).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.
- DCF used: [KPDF202SCL1620x1220\\_8bitCon.DCF](#)



##### Mode 2: Pseudo-continuous

- $1620 \times 1220 \times 12\text{-bit}$ .
- Camera Link MEDIUM interface (RGB).
- Progressive scan.
- Matrox Helios eCL/XCL sending periodic TIMER1 OUT (CC1) signal to camera to initiate and control exposure time.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.

Continued...

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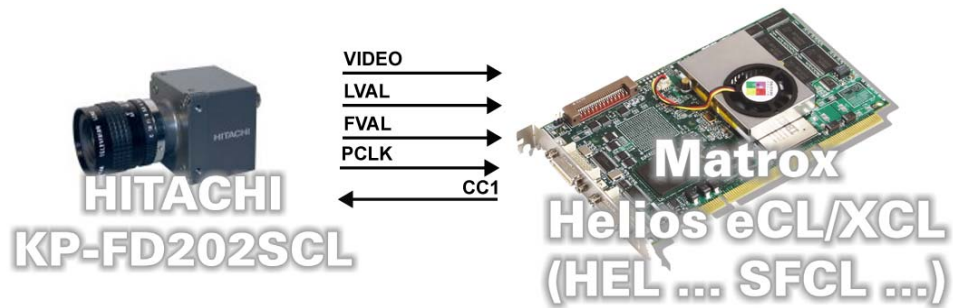
November 4, 2008

Basics about the  
interface modes

#### Camera Interface Briefs (cont.)

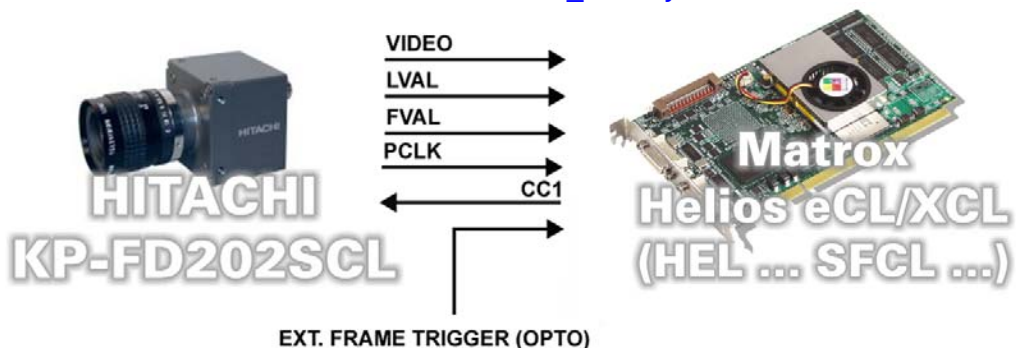
##### Mode 2: Pseudo-continuous

- DCF used: [KPFD202SCL1620x1220\\_8bitPcon.DCF](#)



##### Mode 3: Asynchronous reset

- 1620 × 1220 × 12-bit.
- Camera Link MEDIUM interface (RGB).
- 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 exposure time.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.
- DCF used: [KPFD202SCL1620x1220\\_8bitAsync.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 using the **integration time** setting in the Camera Configuration Utility. Refer to the camera manual for more information.
- Camera control settings:** The camera mode is set to **Trigger mode OFF** 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 **Trigger mode 1 Trigger** 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:** Same as in Mode 2: Pseudo-continuous.

#### Cabling Requirements

##### Modes 1 and 2: Continuous and Pseudo-continuous

- **Cable and Connection:** Two Mini-Camera Link Cables.

##### Mode 3: Asynchronous reset

- **Cable and Connection:** Two Mini-Camera Link cable.
- **External trigger:** External trigger should be connected to the OPTO TRIG input of the 9-pin connector on the Expanded I/O adapter bracket.

##### EXPANDED I/O BRACKET (9-pin connector)

##### External Trigger Source

|            |    |   |        |    |
|------------|----|---|--------|----|
| OPTOTRIG + | 07 | ← | SIGNAL | -- |
| OPTOTRIG - | 02 | ← | 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, 2008-2011.

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