

Matrox Radiant eCL

Camera Interface Application Note

DALSA PT-42-04M60

October 17, 2011

Basics about the camera

Camera Descriptions

- Effective resolution: $2352 \times 1728 \times 10\text{-bit}$ @ 60 fps.
- Camera Link MEDIUM interface (Four taps).
- Progressive scan.
- Internal sync.
- External or internal exposure control.
- 85 MHz pixel clock rate.

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

Interface Mode

- Continuous (Internal EXSYNC)
- Pseudo-continuous (Smart EXSYNC)
- Asynchronous reset (Smart EXSYNC)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- $2352 \times 1728 \times 10\text{-bit}$ @ 60 fps.
- Camera Link MEDIUM interface (Four taps).
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 80 MHZ) and video from camera.
- DCF used: [PT4204M60_2352x1728_10bit4TapsCon_Radiant.DCF](#)



Mode 2: Pseudo-continuous

- $2352 \times 1728 \times 10\text{-bit}$.
- Camera Link MEDIUM interface (Four taps).
- Matrox Radiant eCL sending EXPOSURE1 (CC1) signal to camera to initiate and control the exposure time.
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 80 MHZ) and video from camera.
- DCF used: [PT4204M60_2352x1728_10bit4TapsPcon_Radiant.DCF](#)

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Basics about the interface modes

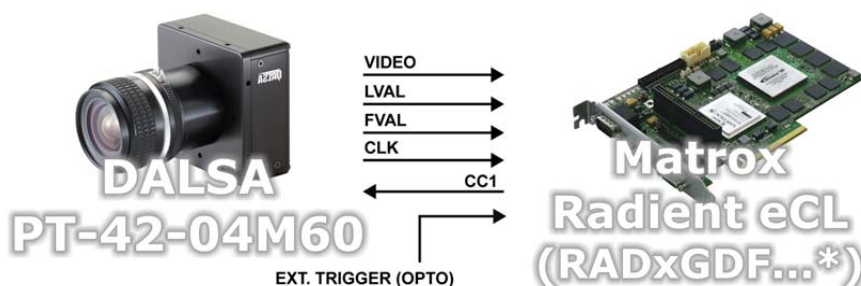
Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- $2352 \times 1728 \times 10$ -bit.
- Camera Link MEDIUM interface (Four taps).
- Matrox Radiant eCL receiving external OPTO trigger signal.
- Matrox Radiant eCL sending EXPOSURE1 (CC1) signal to camera to initiate and control the exposure.
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 80 MHZ) and video from camera.
- DCF used: [PT4204M60_2352x1728_10bit4TapsAsync_Radiant.DCF](#)



Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Matrox Radiant eCL receives the continuous video from the camera at 60 frames per second.
- **Exposure time:** Exposure time is determined by shutter setting. Refer to the camera manual for more information.
- **Camera control:** The camera mode is set using the Windows HyperTerminal utility. Type sem 2 at the prompt to set the mode. Refer to the camera manual for the serial command descriptions.

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Specifics about the interface modes

Camera Interface Details (cont.)

Mode 1: Continuous

- **Bayer Color Filter:** Color information is generated by a Bayer color mosaic filter mounted on the sensor. Color information can be obtained by converting from Bayer to RGB by using the board's hardware (if available), or by using a software-based conversion (i.e., MIL function calls) on the Host. Following each frame capture it will be necessary to make a call to your MIL/MIL-Lite program in order to reconstruct the proper color image. This may introduce processing time by the host computer, which will reduce the effective acquisition rate. For more information, contact your local Sales representative or Matrox Imaging Technical Support.

Mode 2: Pseudo-continuous

- **Frame rate:** The frame rate is determined by the frequency of the EXPOSURE1 (CC1) signal.
- **Exposure time:** The exposure time is determined by the active duration of the EXPOSURE1 (CC1) signal, 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 using the Windows HyperTerminal utility. Type sem 4 (Smart EXSYNC mode) at the prompt to set the mode. Refer to the camera manual for the serial command descriptions.
- **Bayer Color Filter:** Refer to Mode 1: Continuous.

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal. The period between external trigger signals must be larger than the total duration of the exposure time (pulse period of Timer1) plus the time for one frame.
- **Exposure time:** Refer to Mode 2: Pseudo-continuous.
- **Camera settings:** The camera mode is set using the Windows HyperTerminal utility. Type sem 4 (Smart EXSYNC mode) at the prompt to set the mode. Refer to the camera manual for the serial command descriptions.
- **Bayer Color Filter:** Refer to Mode 1: Continuous.

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Cabling details for the interface modes

Cabling Requirements

Mode 1 and 2: Continuous and Pseudo-continuous

- **Cable and Connection:** Two Mini-To-Mini Camera Link cables.

Mode 3: Asynchronous Reset

- **Cable and Connection:** Two Mini-To-Mini Camera Link cables.
- **External trigger:** External trigger should be connected to the external auxiliary I/O (connector A on Matrox Radiant eCL bracket).

EXTERNAL AUX. I/O

(connector A)

PIN NAME		PIN NO.		External Trigger Source	
				PIN NAME	PIN NO.
OPTO_AUX_IN0 +		15	←	SIGNAL	--
OPTO_AUX_IN0 -		09	←	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, 2010-2011.

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