

Matrox Odyssey eCL/XCL

Camera Interface Application Note

DALSA Pantera PT-40-04M60 September 14, 2006

*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.
- Internal or external exposure control.
- 80 MHz pixel clock rate.

NOTE the DCFs for this interface require
the use of a Matrox Odyssey eCL/XCL
Single-FULL Camera Link board

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

Interface Modes

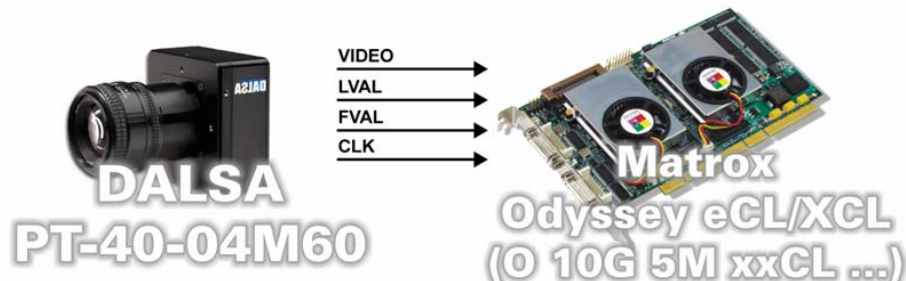
- Continuous (Internal SYNC)
- Pseudo-continuous (Smart EXSYNC)
- Asynchronous reset (Smart EXSYNC)

*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 Odyssey eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 80 MHz) and video signals from camera.
- DCF: [PT4004M60_2352x1728_10bit4tapCon.DCF](#)



Mode 2: Pseudo-continuous

- $2352 \times 1728 \times 10\text{-bit}$.
- Camera Link MEDIUM interface (four taps).
- Matrox Odyssey eCL/XCL sending periodic EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Odyssey eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 80 MHz) and video signals from camera.
- DCF: [PT4004M60_2352x1728_10bit4tapPcon.DCF](#)

Matrox Odyssey eCL/XCL

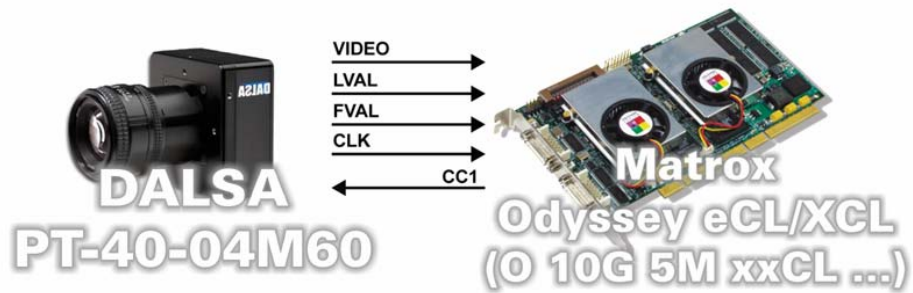
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Basics about the
interface modes

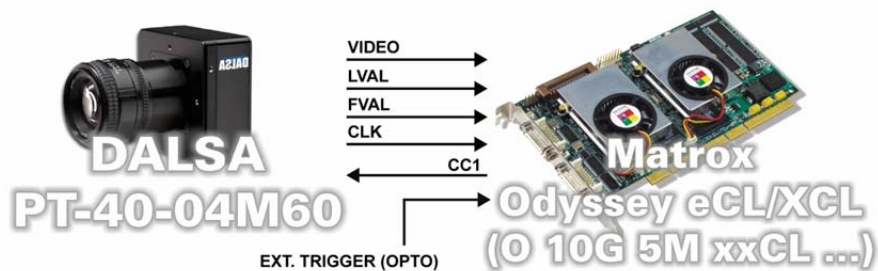
Camera Interface Briefs (continued)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- $2352 \times 1728 \times 10$ -bit.
- Camera Link MEDIUM interface (four taps).
- Progressive scan.
- Matrox Odyssey eCL/XCL receiving external OPTO trigger signal.
- Matrox Odyssey eCL/XCL sending EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Odyssey eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 80 MHz) and video signals from camera.
- DCF used: [PT4004M60_2352x1728_10bit4tapAsync.DCF](#)



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Specifics about the
interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** With this DCF, the Matrox Odyssey eCL/XCL receives the continuous video from the camera at 60 frames per second.
- **Exposure time:** Exposure time is determined by the camera's shutter setting. Refer to the camera manual for more information.
- **Camera Control:** The camera mode is set using Windows HyperTerminal utility. Refer to the camera manual for the command descriptions.

Mode	Setting
Exposure mode	Sem 3 or 4
Video output mode	Svm 0
Camera Link mode	Clm 16 (4taps – 10-bits)

Mode 2: Pseudo-continuous

- **Frame Rate:** With this DCF, the Matrox Odyssey eCL/XCL receives the pseudo-continuous video from the camera. Frame rate is controlled by the frequency of the EXPOSURE1 (CC1) signal.
- **Exposure time:** The width (rising edge to falling edge) of the EXPOSURE1 (CC1) signal is the exposure time. To modify the exposure time, change the **active** duration of Timer1 in Matrox Intellicam or with the MIL MdigControl() function. It is recommended that the **inactive** period of Timer1 be set to greater than one frame duration. Furthermore, any increase or decrease to the exposure time will respectively decrease or increase the frame rate.
- **Camera Control:** The camera mode is set using Windows HyperTerminal utility. Refer to the camera manual for the command descriptions.

Mode	Setting
Exposure mode	Sem 4
Video output mode	Svm 0
Camera Link mode	Clm 16 (4taps – 10-bits)

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*Specifics about the
interface modes*

Camera Interface Details (cont.)

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:** The width (rising edge to falling edge) of the EXPOSURE1 (CC1) signal is the exposure time. To modify the exposure time, change the pulse duration of Timer1 in Matrox Intellicam or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Camera Control:** The camera mode is set using Windows HyperTerminal utility. Refer to the camera manual for the command descriptions.

Mode	Setting
Exposure mode	Sem 4
Video data output mode	Svm 0
Camera Link mode	Clm 16 (4taps – 10-bits)

*Cabling details for the
interface modes*

Cabling Requirements

Mode 1 and 2: Continuous and Pseudo-continuous

- **Cable and Connection:** Standard Camera Link cable.

Mode 3: 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	←	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, 2006-2011.

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