

Matrox Solios eCL/XCL

Camera Interface Application Note

DALSA Pantera PT-40-04M60

July 12, 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 an 85 MHz Matrox Solios eCL/XCL (SOL ... FC ...)

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

- $2352 \times 1728 \times 10\text{-bit}$ @ 50 fps.
- Camera Link MEDIUM interface (four taps).
- Matrox Solios 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 Solios eCL/XCL sending periodic EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Solios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 80 MHz) and video signals from camera.
- DCF: [PT4004M60_2352x1728_10bit4tapPcon.DCF](#)

Matrox Solios eCL/XCL

Camera Interface Application Note

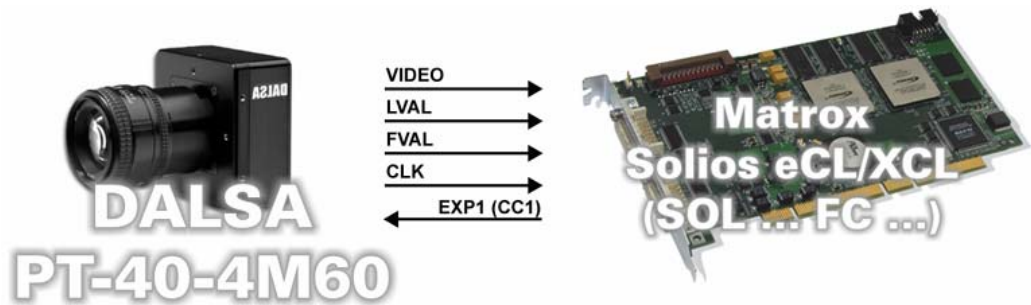
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Basics about the
interface modes

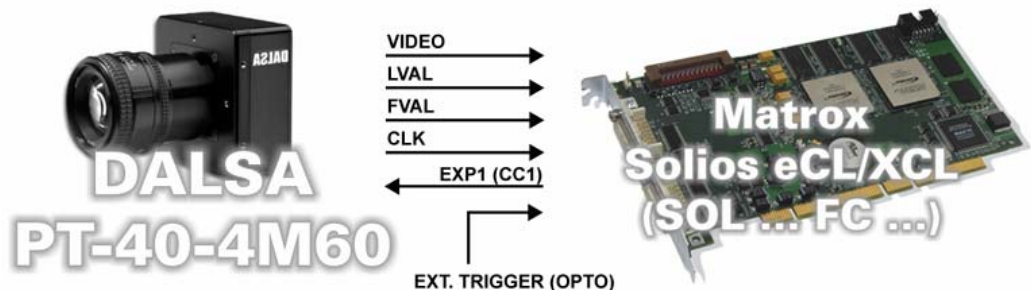
Camera Interface Briefs (continued)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- 2352 × 1728 × 10-bit.
- Camera Link MEDIUM interface (four taps).
- Progressive scan.
- Matrox Solios eCL/XCL receiving external OPTO trigger signal.
- Matrox Solios eCL/XCL sending EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Solios 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 Solios eCL/XCL receives the continuous video from the camera at 50 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 Solios 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 Electronic Systems, 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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