Matrox Odyssey eCL/XCL
Camera Interface Application Note
DALSA Pantera DS-21-04M15 August 18, 2006

Basics about the camera

Camera Descriptions

- Effective Resolution: 2048 × 2048 × 10-bit @ 16 fps.
- Camera Link BASE interface (two taps).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 40 MHz pixel clock rate.

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

Interface Modes

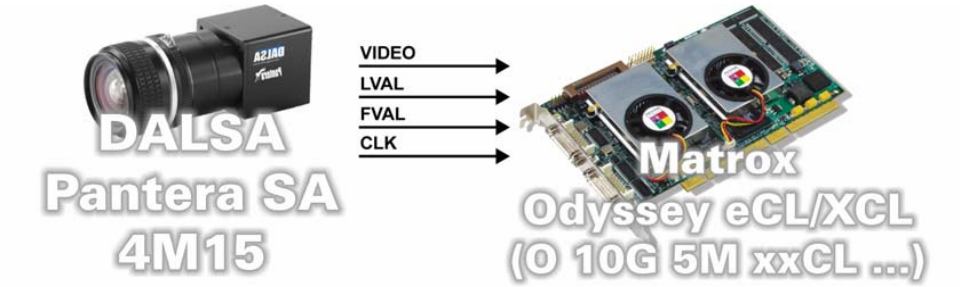
- Continuous (Internal SYNC)
- Pseudo-continuous (Smart EXSYNC)
- Asynchronous reset (Smart EXSYNC)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 2048 × 2048 × 10-bit @ 16 fps.
- Camera Link BASE interface (two taps).
- Matrox Odyssey eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 40 MHz) and video signals from camera.
- DCF: 4M15_2048x2048_10bit2tapCon.DCF



Mode 2: Pseudo-continuous

- 2048 × 2048 × 10-bit.
- Camera Link BASE interface (two 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 @ 40 MHz) and video signals from camera.
- DCF: 4M15_2048x2048_10bit2tapPcon.DCF

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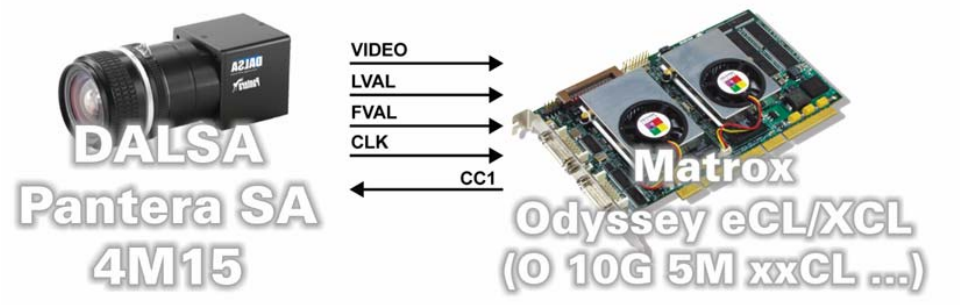
Basics about the interface modes

Camera Interface Briefs (continued)

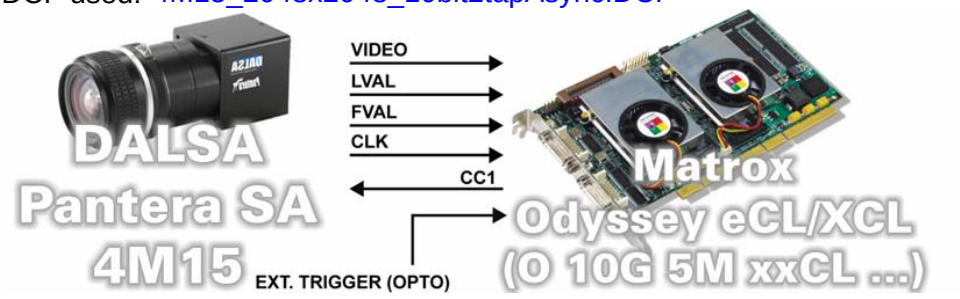
Mode 2: Pseudo-continuous



Basics about the interface modes

Mode 3: Asynchronous reset

- 2048 × 2048 × 10-bit.
- Camera Link BASE interface (two 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 @ 40 MHz) and video signals from camera.
- DCF used: 4M15_2048x2048_10bit2tapAsync.DCF



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 16 frames per second.
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual for more information.

Specifics about the interface modes

Camera Interface Details (cont.)

Mode 1: Continuous

- **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 2
Data output mode	Sdm 0

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, ONL imCamControl() or imDigControl() function 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
Data output mode	Sdm 0

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
Data output mode	Sdm 0

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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	--

Matrox Electronic Systems Ltd.

1055 St. Regis Blvd.
Dorval, Quebec H9P 2T4
Canada
Tel: (514) 685-2630
Fax: (514) 822-6273