Matrox Odyssey Xpro
Camera Interface Application Note
BASLER A403k December 19, 2006

Basics about the camera

Camera Descriptions

- Effective resolution: 2352 × 1726 × 10-bit @ 47 fps.
- Camera Link MEDIUM interface (Quad tap)*.
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 50 MHz pixel clock rate.

***NOTE the DCFs for this interface require the use of a Matrox Odyssey Xpro main board with the Single-FULL Camera Link frame grabber module**

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

Interface Mode

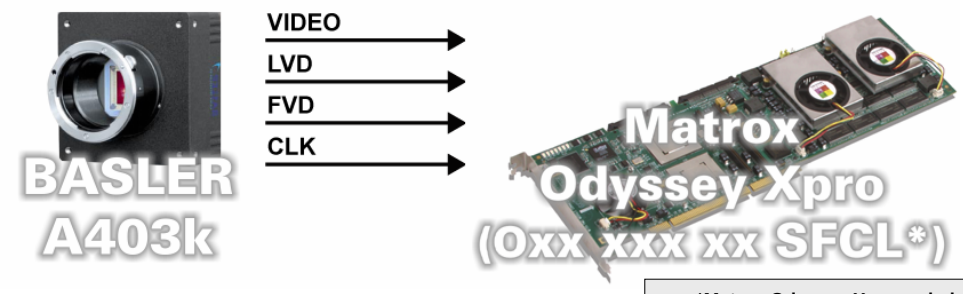
- Continuous
- Pseudo-continuous
- Asynchronous reset (Exsync, Level Controlled)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 2352 × 1726 × 10-bit @ 47 fps.
- Camera Link MEDIUM interface (Quad tap).
- Progressive scan.
- Matrox Odyssey Xpro receiving LDV, FDV, CLK and video from camera.
- DCF used: A403k2352x1726_10bit4tapsCon.DCF



***Matrox Odyssey Xpro main board with the Single-FULL Camera Link frame grabber module**

Mode 2: Pseudo-continuous

- 2352 × 1726 × 10-bit.
- Camera Link MEDIUM interface (Quad tap).
- Progressive scan.
- Matrox Odyssey Xpro sending periodic EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Odyssey Xpro receiving LDV, FDV, CLK and video from camera.

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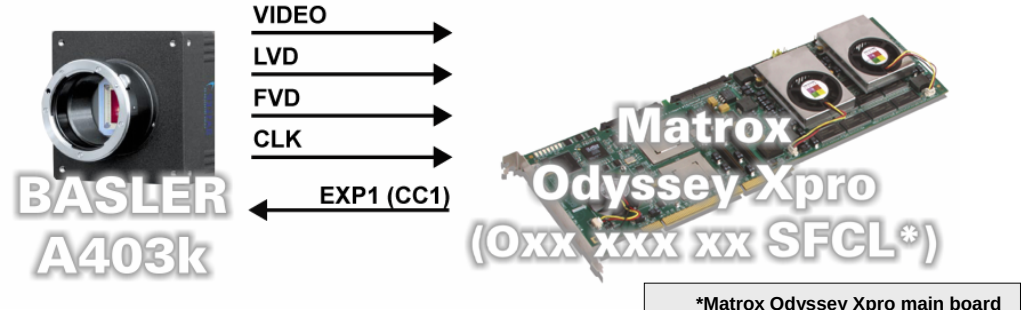
Basics about the interface modes

Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous

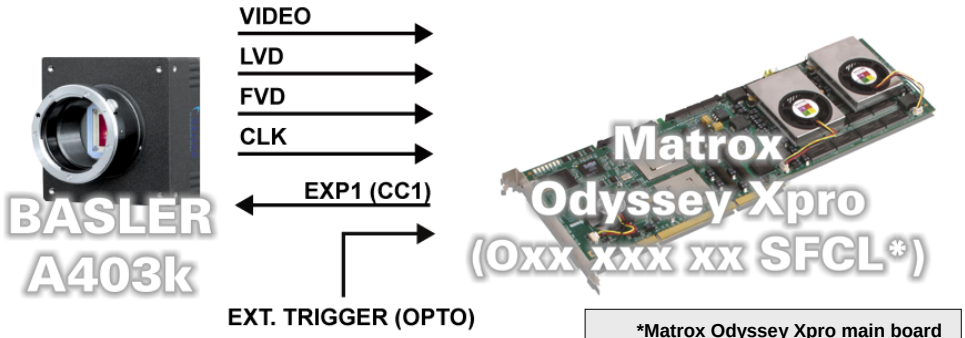
- DCF used: A403k2352x1726_10bit4tapsPcon.DCF



*Matrox Odyssey Xpro main board with the Single-FULL Camera Link frame grabber module

Mode 3: Asynchronous reset

- 2352 × 1726 × 10-bit.
- Camera Link MEDIUM interface (Quad tap).
- Progressive scan.
- Matrox Odyssey Xpro receiving external trigger signal.
- Matrox Odyssey Xpro sending EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Odyssey Xpro receiving LDV, FDV, CLK and video from camera.
- DCF used: A403k2352x1726_10bit4tapsAsync.DCF



*Matrox Odyssey Xpro main board with the Single-FULL Camera Link frame grabber module

Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Odyssey Xpro receives the continuous video from the camera at 47 frames per second.
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual for more information.
- **Camera control settings:** Using the Basler Camera Configuration Tool Plus (CCT+), set the camera controls as follows:

Control	Setting
Output / Video Data Output mode	4 taps 10 Bits
Exposure / Exposure Time Control mode	Free Run, Programmable

Mode 2: Pseudo-continuous

- **Frame Rate and Exposure Time:** Frame rate is determined by the EXPOSURE1 (CC1) setting in the DCF. Changing the frequency (delay period) will control the frame rate, while changing the width (falling edge to rising edge) of EXPOSURE1 (CC1) will control the frame rate as well as exposure time. The frame rate and exposure time can be modified using Matrox Intellicam, with the ONL imCamControl() or imDigControl() function, or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Camera control settings:** Using the Basler Camera Configuration Tool Plus (CCT+), set the camera controls as follows:

Control	Setting
Output / Video Data Output mode	4 taps 10 Bits
Exposure / Exposure Time Control mode	ExSync, Level-controlled

Mode 3: Asynchronous reset

- **Frame Rate:** The frame rate is determined by the frequency of the external trigger signal as well as the width (falling edge to rising edge) of EXPOSURE1 (CC1).
- **Exposure time:** The width (falling edge to rising edge) of the EXPOSURE1 (CC1) signal is the exposure time. The exposure time can be modified using Matrox Intellicam, ONL imCamControl() or imDigControl() function, or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Camera control settings:** Using the Basler Camera Configuration Tool Plus (CCT+), set the camera controls as follows:

Control	Setting
Output / Video Data Output mode	4 taps 10 Bits
Exposure / Exposure Time Control mode	ExSync, Level-controlled

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Cabling details for the interface modes

Cabling Requirements

Modes 1 and 2: Continuous and Pseudo-continuous

- **Cable and Connection:** Two (2) standard Camera Link cables.

Mode 3: Asynchronous reset

- **Cable and Connection:** Two (2) standard Camera Link cables.
- **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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