Matrox Odyssey Xpro
Camera Interface Application Note
BASLER avA1000-120kc March 11, 2009

Basics about the camera

Camera Descriptions

- Effective resolution: 1036 × 1036 × 12-bit @ 118 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Bayer color filter (8 or 12-bit).
- Internal sync.
- Internal or external exposure control.
- 65 MHz pixel clock rate.

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

Interface Mode

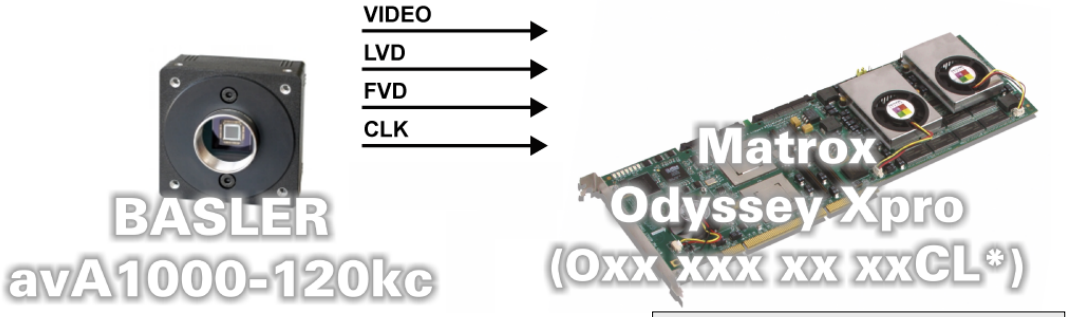
- Continuous
- Pseudo-continuous
- Asynchronous reset (Trigger mode)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 1036 × 1036 × 12-bit @ 118 fps.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Bayer color filter.
- Matrox Odyssey Xpro receiving LDV, FDV, CLK and video from camera.
- DCF used: avA1000-120kc1036x1036_12bit2tapsCon.DCF



***Matrox Odyssey Xpro main board with Camera Link frame grabber module**

Mode 2: Pseudo-continuous

- 1036 × 1036 × 12-bit.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Bayer color filter.
- 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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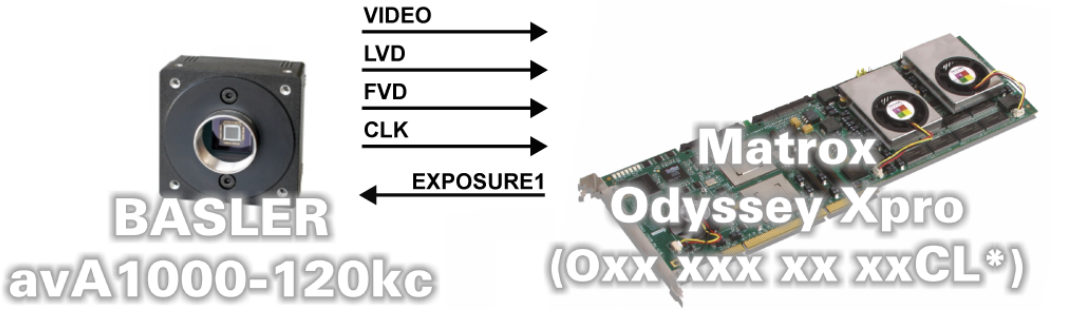
Basics about the interface modes

Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous

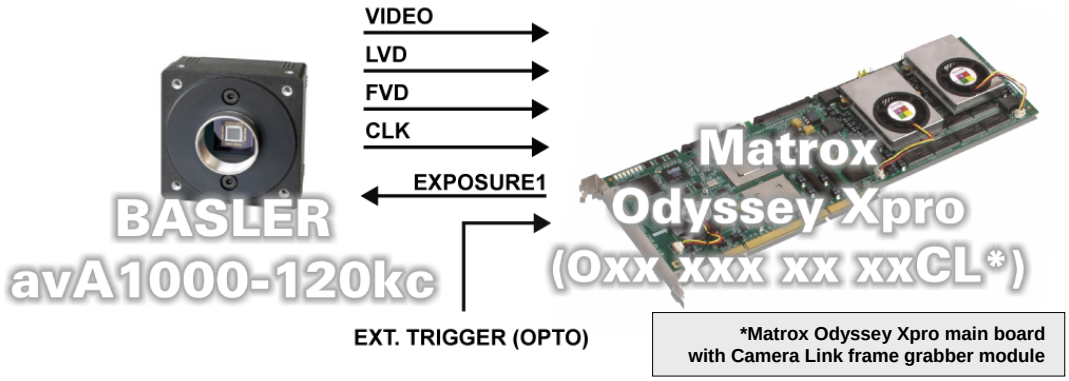
- DCF used: avA1000-120kc1036x1036_12bit2tapsPcon.DCF



*Matrox Odyssey Xpro main board with Camera Link frame grabber module

Mode 3: Asynchronous reset

- 1036 × 1036 × 12-bit.
- Camera Link BASE interface (Dual tap).
- Progressive scan.
- Bayer color filter.
- 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: avA1000-120kc1036x1036_12bit2tapsAsync.DCF



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Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Odyssey Xpro receives the continuous video from the camera at 118 frames per second.
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual for more information.
- **Camera control settings:** Set the Basler Pylon viewer tool to **expert user level** and set the camera controls as follows:

Section	Setting
Image Format Controls	Pixel Format \ Bayer GR 12
AOI Controls	Width \ 1036 Height \ 1036
Acquisition Controls	Trigger Mode \ Off

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 when **Trigger Width** is selected for the Exposure Mode from the camera. 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:** Set the Basler Pylon viewer tool to **expert user level** and set the camera controls as follows:

Section	Setting
Image Format Controls	Pixel Format \ Bayer GR 12
AOI Controls	Width \ 1036 Height \ 1036
Acquisition Controls	Trigger Mode \ ON Trigger Source \ CC1 Trigger Activation \ Rising Edge Exposure Mode \ Trigger Width

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 when **Trigger Width** is selected for the Exposure Mode from the camera. 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:** Refer to Mode 2: Pseudo-continuous.

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Cabling details for the interface modes

Cabling Requirements

Modes 1 and 2: Continuous and Pseudo-continuous

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

Mode 3: Asynchronous reset

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

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