

# Matrox Odyssey Xpro

## Camera Interface Application Note

### JAI CV-M9CL

April 26, 2005

Basics about the  
camera

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

Basics about the  
interface modes

#### Camera Descriptions

- Effective Resolution:  $1034 \times 779 \times 10\text{-bit}$  @ 30 fps.
- Camera Link MEDIUM interface (RGB - three tap).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 33.75 MHz pixel clock rate.

#### Interface Modes

- Continuous (Normal continuous)
- Pseudo-continuous (Pulse Width Control)
- Asynchronous reset (Pulse Width Control)

#### Camera Interface Briefs

##### Mode 1: Continuous

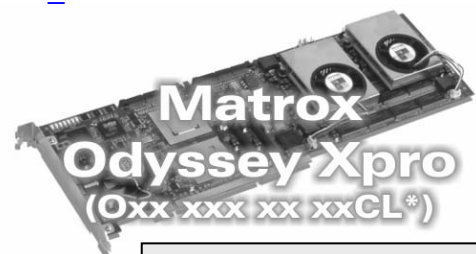
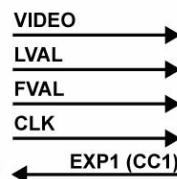
- $1034 \times 779 \times 10\text{-bit}$  @ 30 fps.
- Camera Link MEDIUM interface (RGB - three tap).
- Matrox Odyssey Xpro receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 33.75 MHz) and video signals from camera.
- DCF: [CVM9CL1034x779\\_10bit3tapRGB\\_Con.DCF](#)



\*Matrox Odyssey Xpro main board  
with Camera Link grab module

##### Mode 2: Pseudo-continuous

- $1034 \times 779 \times 10\text{-bit}$ .
- Camera Link MEDIUM interface (RGB - three tap).
- Matrox Odyssey Xpro sending periodic EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Odyssey Xpro receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 33.75 MHz) and video signals from camera.
- DCF: [CVM9CL1034x779\\_10bit3tapRGB\\_Pcon.DCF](#)



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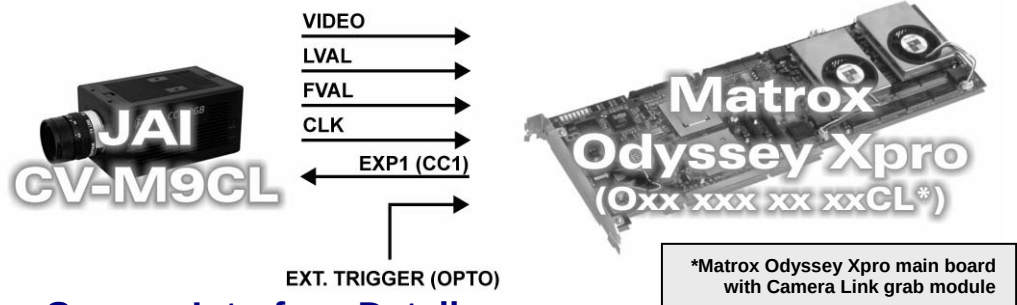
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Basics about the  
interface modes

#### Camera Interface Briefs (continued)

##### Mode 3: Asynchronous reset

- 1034 × 779 × 10-bit.
- Camera Link MEDIUM interface (RGB - three tap).
- Progressive scan.
- Matrox Odyssey Xpro receiving external OPTO trigger signal.
- Matrox Odyssey Xpro sending EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Odyssey Xpro receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 33.75 MHz) and video signals from camera.
- DCF used: [CVM9CL1034x779\\_10bit3tapRGB\\_Async.DCF](#)



Specifics about the  
interface modes

#### Camera Interface Details

##### Mode 1: Continuous

- **Frame Rate:** With this DCF, the Matrox Odyssey Xpro receives the continuous video from the camera at 30 frames per second.
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual for more information.
- **Camera Control:** The camera functions are set to the default settings using the Windows HyperTerminal utility. Refer to the camera manual for the command descriptions.

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Specifics about the  
interface modes

#### Camera Interface Details (cont.)

##### Mode 2: Pseudo-continuous

- **Frame Rate:** With this DCF, the Matrox Odyssey Xpro receives the pseudo-continuous video from the camera. Frame rate is controlled by the frequency of the EXPOSURE1 (CC1) signal.
- **Exposure time:** The width (falling edge to rising 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 the Windows HyperTerminal utility. Refer to the camera manual for the command descriptions.

| Mode                                    | Setting |
|-----------------------------------------|---------|
| Trigger mode = Pulse width control mode | TR = 2  |
| Accumulation LVAL = a-synchronous       | LS = 1  |

##### 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 (falling edge to rising 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 the Windows HyperTerminal utility. Refer to the camera manual for the command descriptions.

| Mode                                    | Setting |
|-----------------------------------------|---------|
| Trigger mode = Pulse width control mode | TR = 2  |
| Accumulation LVAL = a-synchronous       | LS = 1  |

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Cabling details for the  
interface modes

#### Cabling Requirements

##### **Mode 1 and 2: Continuous and Pseudo-continuous**

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

##### **Mode 3: Asynchronous reset**

- **Cable and Connection:** Two 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, 2005-2011.

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