

Matrox Odyssey Xpro

Camera Interface Application Note

DALSA DS-25-02M30-SA

November 7, 2007

Basics about the
camera

Camera Descriptions

- Effective Resolution: 1920 × 1080 × 10-bit @ 30 fps.
- Camera Link BASE interface (two taps).
- Bayer Color Filter.
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 40 MHz pixel clock rate.

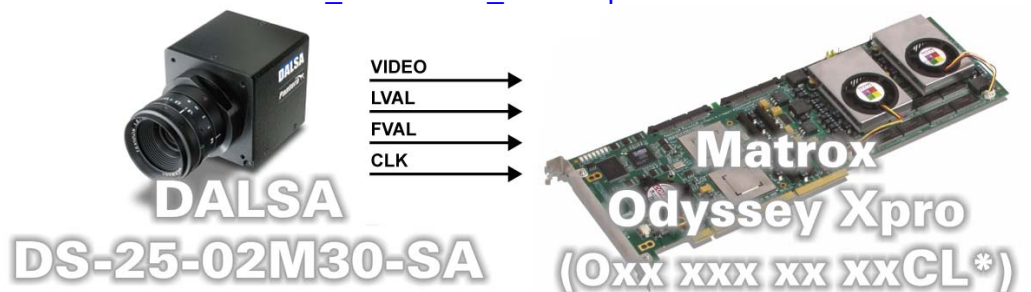
Interface Modes

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

Camera Interface Briefs

Mode 1: Continuous

- 1920 × 1080 × 10-bit @ 30 fps.
- Camera Link BASE interface (two taps).
- Matrox Odyssey Xpro receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 40 MHz) and video signals from camera.
- DCF: [DS252M30SA_1920x1080_10bit2tapCon.DCF](#)



Mode 2: Pseudo-continuous

- 1920 × 1080 × 10-bit.
- Camera Link BASE interface (two taps).
- 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 @ 40 MHz) and video signals from camera.
- DCF: [DS252M30SA_1920x1080_10bit2tapPcon.DCF](#)

Continued...

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

Basics about the
interface modes

Matrox Odyssey Xpro

Camera Interface Application Note

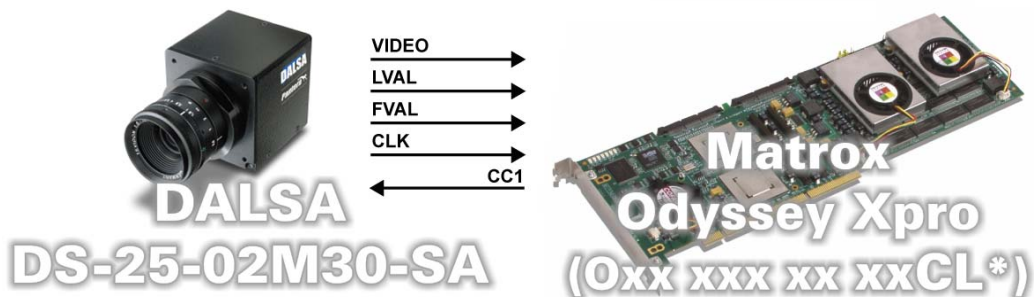
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Basics about the
interface modes

Camera Interface Briefs (continued)

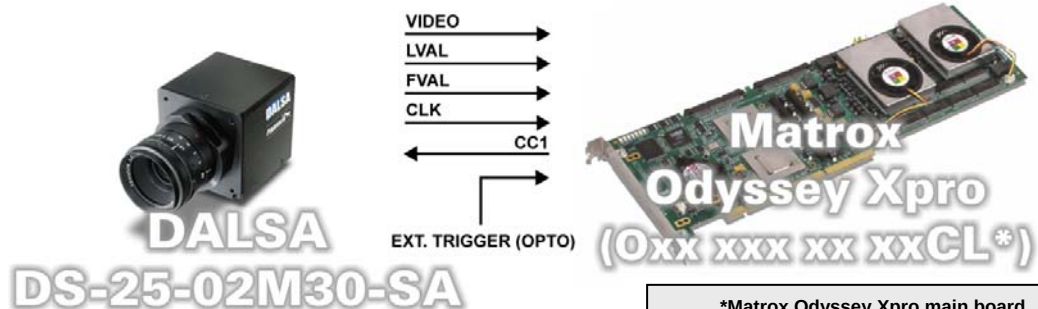
Mode 2: Pseudo-continuous



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

Mode 3: Asynchronous reset

- 1920 × 1080 × 10-bit.
- Camera Link BASE interface (two taps).
- 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 @ 40 MHz) and video signals from camera.
- DCF used: [DS252M30SA_1920x1080_10bit2tapAsync.DCF](#)



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

Matrox Odyssey Xpro

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*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 mode is set using Windows HyperTerminal. Type **sem 2** at the prompt to set the mode. Refer to the camera manual for the serial command descriptions.
- **Bayer Color Filter:** Color information is generated by a Bayer color mosaic filter mounted on the sensor. RGB information can only be obtained through software-based conversion. Following each frame capture it will be necessary to make a call to your MIL/MIL-Lite program in order to reconstruct the proper color image. This will require processing time by the host computer, which may reduce the effective acquisition rate. For more information, contact your local Sales representative or Matrox Imaging Technical Support.

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 (rising edge to falling edge) of the EXPOSURE1 (CC1) signal is the exposure time. To modify the exposure time, change the **inactive** duration of Timer1 in Matrox Intellicam, ONL imCamControl() or imDigControl() function or with the MIL MdigControl() function. It is recommended that the **active** 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.
- **Bayer Color Filter:** Refer to Mode 1: Continuous
- **Camera Control:** The camera mode is set using Windows HyperTerminal. Type **sem 6** (External EXSYNC mode) at the prompt to set the mode. Refer to the camera manual for the serial command descriptions.

Matrox Odyssey Xpro

Camera Interface Application Note

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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. Type **sem 4** (Smart EXSYNC mode) at the prompt to set the mode. Refer to the camera manual for the serial command descriptions.
- **Bayer Color Filter:** Refer to Mode 1: Continuous

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 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, 2007-2011.

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