Matrox Odyssey eCL/XCL
Camera Interface Application Note
Redlake Motionscope M3 April 17, 2008

Basics about the camera

Camera Descriptions

- Effective resolution: 1280 × 1024 × 8-bit @ 500 fps.
- Camera Link FULL interface (Ten taps).
- Progressive scan, monochrome or color.
- Internal or external sync.
- Internal or external exposure control.
- 72 MHz pixel clock rate.

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

Interface Mode

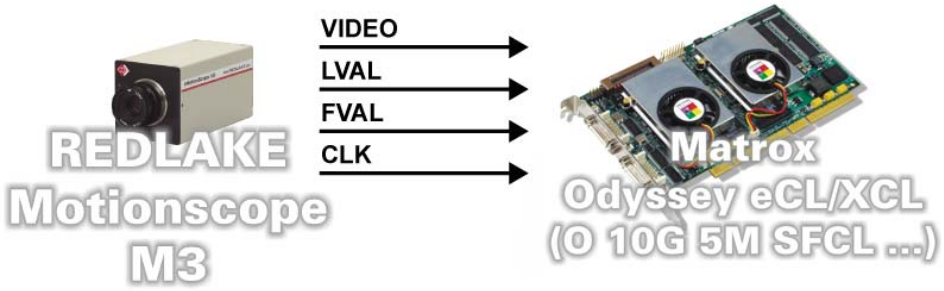
- Continuous (Continuous mode)
- Pseudo-continuous (Pulse Width Control)
- Asynchronous reset (Pulse Width Control)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 1280 × 1024 × 8-bit @ 500 fps.
- Camera Link FULL interface (Ten tap).
- Matrox Odyssey eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 72 MHz) and video from camera.
- DCF used: M3_1280x1024_8bitCon.DCF



Mode 2: Pseudo-continuous

- 1280 × 1024 × 8-bit.
- Camera Link FULL interface (Ten taps).
- Matrox Odyssey eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate the exposure.
- Matrox Odyssey eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 72 MHz) and video from camera.
- DCF used: M3_1280x1024_8bitPcon.DCF

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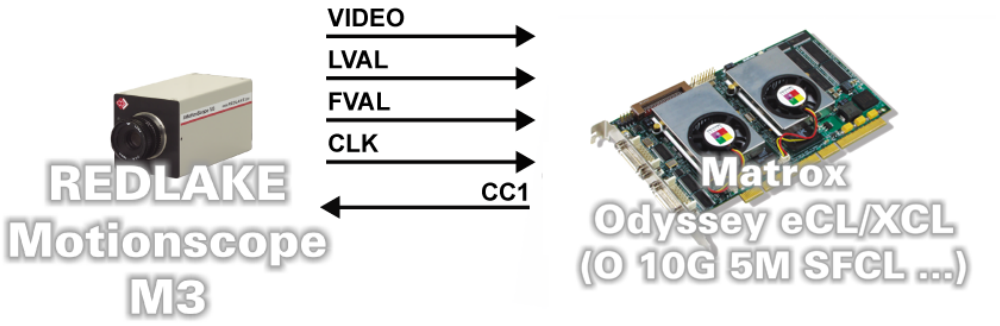
Basics about the interface modes

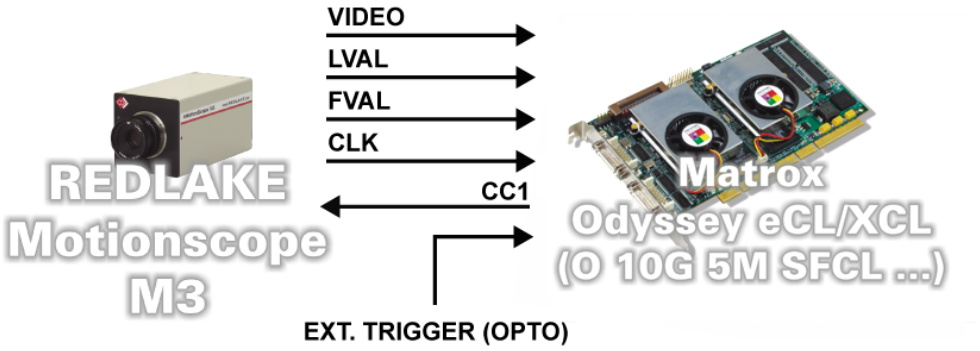
Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous Reset

- 1280 × 1024 × 8-bit.
- Camera Link FULL interface (Ten taps).
- Matrox Odyssey eCL/XCL receiving external trigger signal.
- Matrox Odyssey eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate the exposure.
- Matrox Odyssey eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 72 MHz) and video from camera.
- DCF used: M3_1280x1024_8bitAsync.DCF



Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame rate**: Matrox Odyssey receives the continuous video from the camera at up to 500 frames per second.
- **Exposure time:** Exposure time is set using the integration time setting in the Camera Configuration utility. Refer to the camera manual for more information.
- **Camera control settings:** Using the Redlake M-Series Camera Control Utility, set **Sync In** to **Internal**.

Specifics about the interface modes

Camera Interface Details (cont.)

Mode 2: Pseudo-continuous

- **Frame rate**: The frame rate is determined by the frequency of the TIMER1 OUT (CC1) signal.
- **Exposure time:** The Active Duration of the TIMER1 OUT (CC1) signal is the exposure time, which can be modified in the DCF using Matrox Intellicam, with the ONL imCamControl() or imDigControl() function, or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera control settings:** Using the Redlake M-Series Camera Control Utility, set **Sync In** to **External Pulse-High**.

Mode 3: Asynchronous Reset

- **Frame rate**: The frame rate is determined by the frequency of the external trigger signal. The period between the external trigger signals must be larger than the frame readout period (2 ms) plus the exposure time.
- **Exposure time:** Refer to Mode 2: Pseudo-continuous.
- **Camera settings:** Refer to Mode 2: Pseudo-continuous.

Cabling details for the interface modes

Cabling Requirements

Mode 1: Continuous

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

Mode 2: Pseudo-continuous

- **Cable and Connection:** Two standard Camera Link cables.
- **External trigger:** SYNC should be connected to the OPTO TRIG input of the 9-pin and 44-pin connector on the Expanded I/O adapter bracket.

EXPANDED I/O BRACKET (44-pin connector)			**Camera MINI BNC**	
P0_TTL_AUX_IO_1	13	→	SYNC IN	--
GND	14	→	GROUND	--

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Cabling details for the interface modes

Cabling Requirements

Mode 3: Asynchronous reset

- **Cable and Connection:** Two standard Camera Link cables.
- **External trigger:** External trigger and SYNC should be connected to the OPTO TRIG input of the 9-pin and 44-pin connector on the Expanded I/O adapter bracket.

EXPANDED I/O BRACKET (9-pin connector)			**External Trigger Source**	
OPTOTRIG +	07	←	SIGNAL	--
OPTOTRIG -	02	←	GROUND	--
EXPANDED I/O BRACKET (44-pin connector)			**Camera MINI BNC**	
P0_TTL_AUX_IO_1	13	→	SYNC IN	--
GND	14	→	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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