Matrox Helios eCL/XCL

Camera Interface Application Note

COHU 7712-2002 November 7, 2007

Basics about the camera

Camera Descriptions

- Effective resolution: 1004 × 1004 × 10-bit @ 30 fps.
- Camera Link BASE interface (Single channel).
- Progressive scan.
- Internal sync.
- Internal exposure control.
- 40 MHz pixel clock rate.

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

Interface Mode

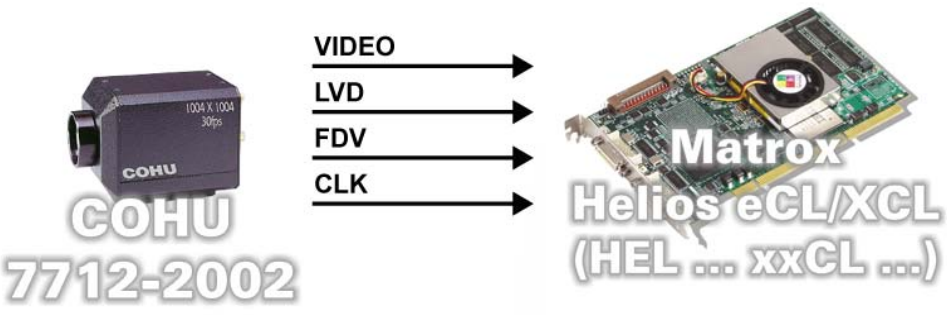
- Continuous (Free running)
- Pseudo-continuous
- Asynchronous rest

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 1004 × 1002 × 10-bit @ 30 fps.
- Camera Link BASE interface (Single channel).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LDV, FDV, CLK and video signal from camera.
- DCF used: 7712-2002_1004x1002_10bitCon.DCF



Mode 2: Pseudo-continuous

- 1004 × 1002 × 10-bit @ 30 fps.
- Camera Link BASE interface (Single channel).
- Progressive scan.
- Matrox Helios eCL/XCL sending periodic EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Helios eCL/XCL receiving LDV, FDV, CLK and video from camera.

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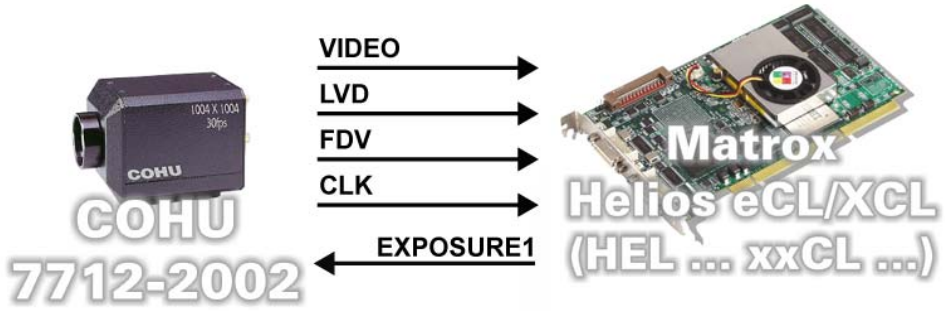
Basics about the interface modes

Camera Interface Briefs (cont.)

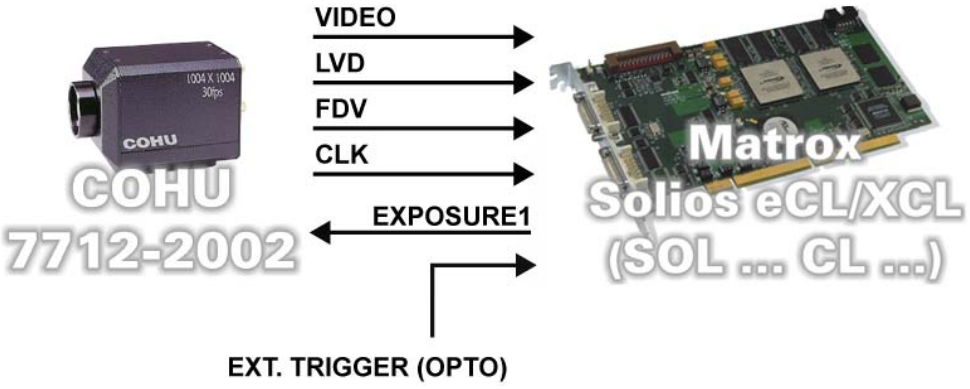
Mode 2: Pseudo-continuous

- DCF used: 7712-2002_1004x1002_10bitPcon.DCF



Mode 3: Asynchronous reset

- 1004 × 1002 × 10-bit.
- Camera Link BASE interface (Single tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving external trigger signal.
- Matrox Helios eCL/XCL sending EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Helios eCL/XCL receiving LDV, FDV, CLK and video from camera.
- DCF used: 7712-2002_1004x1002_10bitAsync.DCF



Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Helios eCL/XCL 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 settings:** To set the camera controls, compile and use the Matrox Imaging camera control application*. Refer to the respective manual for more information about camera controls.

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 or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Camera control settings:** To set the camera controls, compile and use the Matrox Imaging camera control application*. Refer to the respective manual for more information about camera controls.

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 or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Camera control settings:** To set the camera controls, compile and use the Matrox Imaging camera control application*. Refer to the respective manual for more information about camera controls.

***** Note that the Matrox Imaging camera control application is available for download from the Matrox Imaging FTP site or as an attachment in this PDF document (Adobe Reader 7.x and higher).

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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	--

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