

Matrox Helios eCL/XCL

Camera Interface Application Note

SONY XCL-5005CR

March 18, 2009

Basics about the
camera

Camera Descriptions

- Effective resolution: $2448 \times 2050 \times 12\text{-bit}$ @ 15 fps.
- Camera Link BASE interface (Single or dual tap; 8, 10, 12-bit).
- Progressive scan.
- Color RGB or RAW Bayer camera modes.
- Internal sync.
- External or internal exposure control.
- 40 or 80 MHz pixel clock rate.

Interface Mode

- Continuous
- Pseudo-continuous
- Asynchronous reset (Pulse Width Detection)

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

Camera Interface Briefs

Mode 1: Continuous

- $2448 \times 2050 \times 8$ or 12-bit @ 15 fps.
- Camera Link BASE interface.
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [XCL5005CR_2448x2050_8bit2TapsCon.DCF](#) (RAW Bayer)
- DCF used: [XCL5005CR_2448x2050_12bitCon.DCF](#) (RAW Bayer)
- DCF used: [XCL5005CR_2448x2050_8bitRGBCon.DCF](#)



Mode 2: Pseudo-Continuous

- $2448 \times 2050 \times 8$ or 12-bit .
- Camera Link BASE interface.
- Progressive scan.
- Matrox Helios eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.

Continued

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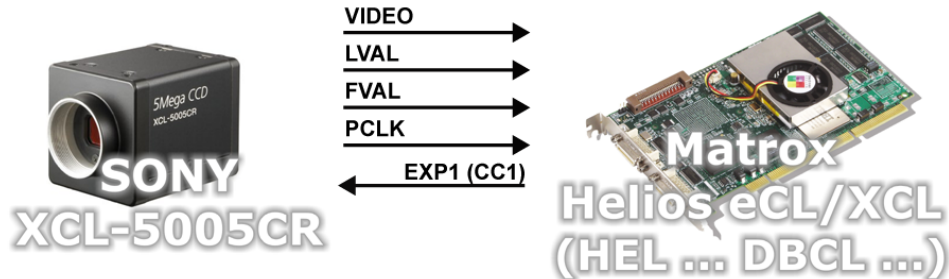
March 18, 2009

Basics about the
interface modes

Camera Interface Briefs (cont.)

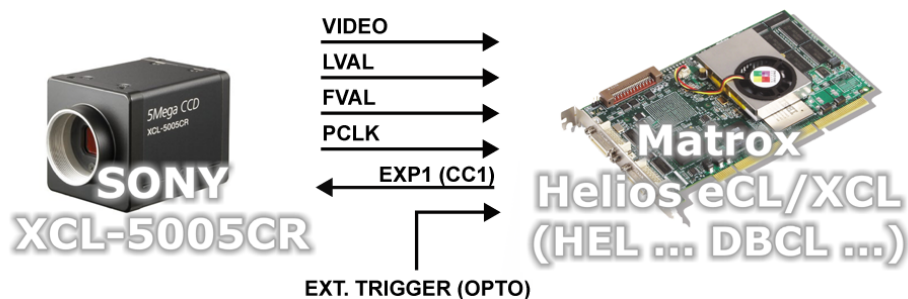
Mode 2: Pseudo-Continuous

- DCF used: [XCL5005CR_2448x2050_8bit2TapsPcon.DCF](#) (RAW Bayer)
- DCF used: [XCL5005CR_2448x2050_12bitPCon.DCF](#) (RAW Bayer)
- DCF used: [XCL5005CR_2448x2050_8bitRGBPcon.DCF](#)



Mode 3: Asynchronous reset

- 2448 × 2050 × 8 or 12-bit.
- Camera Link BASE interface.
- Progressive scan.
- Matrox Helios eCL/XCL receiving external trigger signal.
- Matrox Helios eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [XCL5005CR_2448x2050_8bit2TapsRGBAsync.DCF](#) (RAW Bayer)
- DCF used: [XCL5005CR_2448x2050_12bitRGBAsync.DCF](#) (RAW Bayer)
- DCF used: [XCL5005CR_2448x2050_8bitRGBAsync.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 15 frames per second.
- **Exposure time:** Exposure time is set using the shutter speed setting in the Camera Configuration Utility. Refer to the camera manual for more information.

Continued

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Specifics about
the interface modes

Camera Interface Details (cont.)

Mode 1: Continuous

- **Camera Configuration:** Camera is configured as follows in the Camera Configuration Utility. Refer to the camera manual for more information.

XCL5005CR_2448x2050_8bit2TapsCon.DCF		
Command	Parameter	Description
TRG_MODE	0	OFF
IMG-WIZE	2	8-bit output
IMG-TAP	1	40 MHz 2 TAP output

XCL5005CR_2448x2050_12bitCon.DCF		
Command	Parameter	Description
TRG_MODE	0	OFF
IMG-WIZE	0	12-bit output
IMG-TAP	0	80 MHz 1 TAP output

XCL5005CR_2448x2050_8bitRGBCon.DCF		
Command	Parameter	Description
TRG_MODE	0	OFF
IMG-WIZE	3	RGB 24bit output
IMG-TAP	0	80 MHz 1 TAP output

Mode 2: Pseudo-Continuous

- **Frame rate:** The frame rate is determined by the frequency of the TIMER1 OUT (CC1) signal.
- **Exposure time:** The width (rising edge to falling edge) of the TIMER1 OUT (CC1) signal is the exposure time, which can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera Configuration:** Camera is configured as follows in the Camera Configuration Utility. Refer to the camera manual for more information.

XCL5005CR_2448x2050_8bit2Taps...		
Command	Parameter	Description
TRG_MODE	2	External Trigger/Pulse Width detection
TRG-POL	1	Positive
IMG-WIZE	2	8-bit output
IMG-TAP	1	40 MHz 2 TAP output

Continued

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Specifics about the
interface modes

Camera Interface Details (cont.)

Mode 2: Pseudo-Continuous

- **Camera Configuration:** The camera's trigger mode is set as follows in the Camera Configuration Utility. Refer to the camera manual for more information.

XCL5005CR_2448x2050_12bit...		
Command	Parameter	Description
TRG_MODE	2	External Trigger/Pulse Width detection
TRG-POL	1	Positive
IMG-WIZE	0	12-bit output
IMG-TAP	0	80 MHz 1 TAP output

XCL5005CR_2448x2050_8bitRGB...		
Command	Parameter	Description
TRG_MODE	2	External Trigger/Pulse Width detection
TRG-POL	1	Positive
IMG-WIZE	3	RGB 24bit output
IMG-TAP	0	80 MHz 1 TAP output

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** Refer to Mode 2: Pseudo-Continuous.
- **Camera Configuration:** Refer to Mode 2: Pseudo-Continuous.

Cabling Requirements

Modes 1 and 2: Continuous, Pseudo-continuous

- **Cable and Connection:** MINI-CL to MDR26 Camera Link cable.

Mode 3: Asynchronous reset

- **Cable and Connection:** MINI-CL to MDR26 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	←	LINE SIGNAL --
OPTOTRIG -	02	←	LINE GROUND --

Cabling details for the
interface modes

Cabling details for the
interface modes

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, 2009-2011.

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