

Matrox Helios eCL/XCL

Camera Interface Application Note

MIKROTRON MC1310

September 29, 2006

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: $1280 \times 1024 \times 8\text{-bit}$ @ up to 477 fps.
- Camera Link FULL interface (eight taps).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 63.28 MHz pixel clock rate.

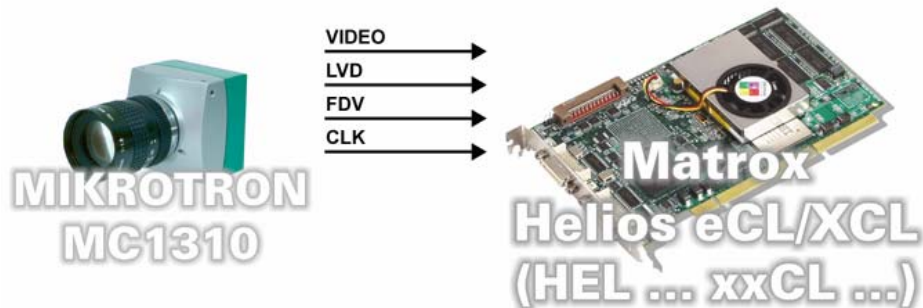
Interface Mode

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

Camera Interface Briefs

Mode 1: Continuous

- $1280 \times 1024 \times 8\text{-bit}$ @ 350 fps.
- Camera Link FULL interface (Eight taps).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LDV, FDV, CLK and video signal from camera.
- DCF used: [MC13101280x1024_8bit8TapCon.DCF](#)



Mode 2: Pseudo-continuous

- $1280 \times 1024 \times 8\text{-bit}$.
- Camera Link FULL interface (Eight taps).
- 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 signal from camera.

Continued

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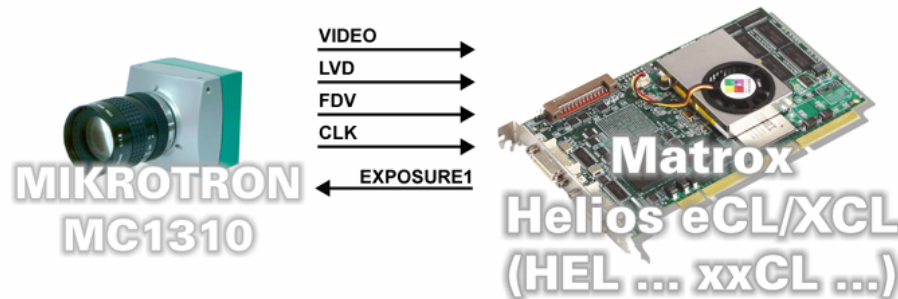
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Basics about the
interface modes

Camera Interface Briefs (cont.)

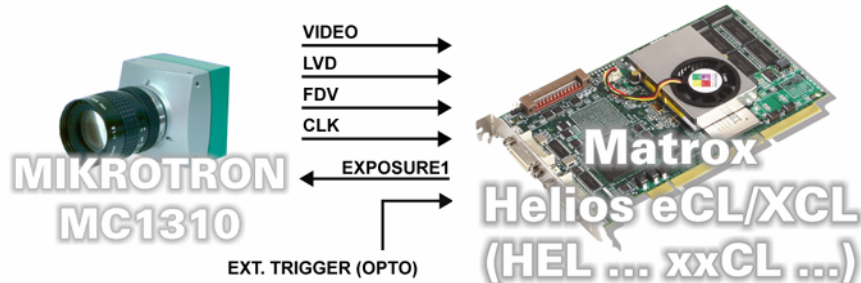
Mode 2: Pseudo-continuous

- DCF used: [MC13101280x1024_8bit8TapPcon.DCF](#)



Mode 3: Asynchronous reset

- 1280 × 1024 × 8-bit.
- Camera Link FULL interface (Eight taps).
- 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 signal from camera.
- DCF used: [MC13101280x1024_8bit8TapAsync.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 350 frames per second at full resolution.
- **Exposure time:** Exposure time is determined by the shutter setting. 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 Control Software settings:** Set the camera controls using the camera manufacturer's (MC13xx configuration tool) or by using the MIL MdigControl() function:

Modes	Settings
Clock Step	9 (63.28 MHz)
Video Data Width	8 x 8
No. of col. and rows	1280 x 1024
Shutter mode	SYNC with Shutter or NO Shutter
Digital gain	1-4 (as desired)

Mode 2: Pseudo-continuous

- **Frame Rate/Exposure time:** The 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 (rising edge to falling edge) of EXPOSURE1 (CC1) controls 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 Software settings:** Set the camera controls using the camera manufacturer's (MC13xx configuration tool) or by using the MIL MdigControl() function:

Modes	Settings
Clock Step	9 (63.28 MHz)
Video Data Width	8 x 8
No. of col. and rows	1280 x 1024
Shutter mode	ASYNCR Pulse Width
Digital gain	1-4 (as desired)

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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.
- **Exposure time:** The width (rising edge to falling 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 Software settings:** Same as Mode 2: Pseudo-continuous.

Cabling details for the
interface modes

Cabling Requirements

Modes 1 and 2: Continuous and Pseudo-continuous

- **Cable and Connection:** Two standard Camera Link cables required for FULL interface.

Mode 3: Asynchronous reset

- **Cable and Connection:** Two standard Camera Link cables required for FULL interface.
- **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, 2006-2011.

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