

Matrox Helios eCL/XCL

Camera Interface Application Note

HITACHI HV-F31CL

May 14, 2007

Basics about the
camera

Camera Descriptions

- Effective resolution: $1024 \times 768 \times 10\text{-bit}$ (RGB) @ 30 fps.
- Camera Link Single-FULL interface (single tap).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 28.8 MHz pixel clock rate.

Interface Mode

- Continuous
- Pseudo-continuous (Trigger mode 1)
- Asynchronous reset (Trigger mode 1)

Camera Interface Briefs

Mode 1: Continuous

- $1024 \times 768 \times 10\text{-bit}$ (RGB) @ 30 fps.
- Camera Link Single-FULL interface (single tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.
- DCF used: [HVF31CL1024x768_10bitRGBCon.DCF](#)



VIDEO
LVAL
FVAL
PCLK



Mode 2: Pseudo-continuous

- $1024 \times 768 \times 10\text{-bit}$ (RGB).
- Camera Link Single-FULL interface (single tap).
- Progressive scan.
- Matrox Helios eCL/XCL sending periodic EXPOSURE1 (CC2) signal to camera to initiate and control exposure time.

Continued...

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

Basics about the
interface modes

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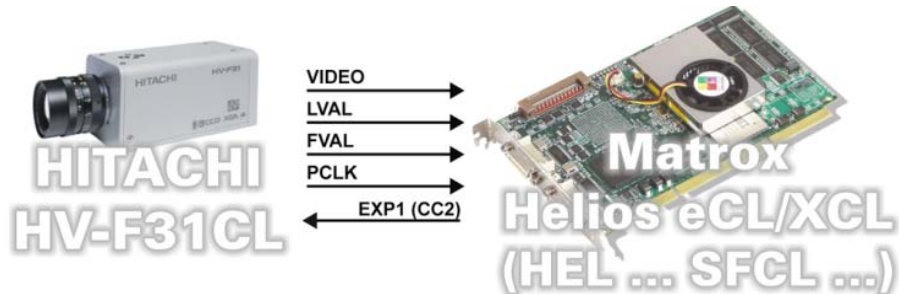
May 14, 2007

Basics about the
interface modes

Camera Interface Briefs (cont.)

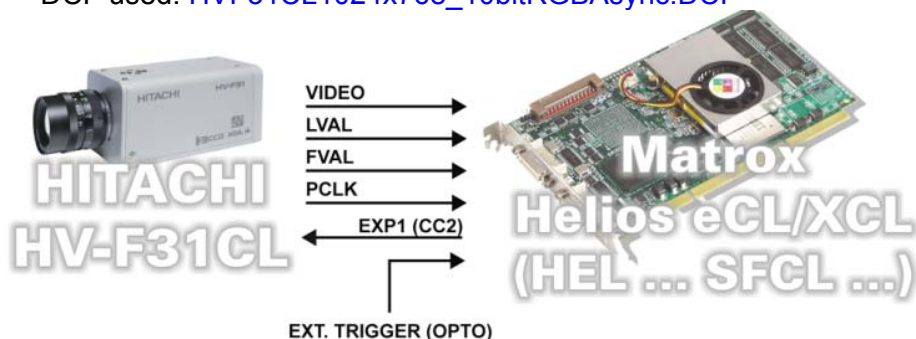
Mode 2: Pseudo-continuous

- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.
- DCF used: [HVF31CL1024x768_10bitRGBPcon.DCF](#)



Mode 3: Asynchronous reset

- 1024 × 768 × 10-bit (RGB).
- Camera Link Single-FULL interface (single tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving external trigger signal.
- Matrox Helios eCL/XCL sending EXPOSURE1 (CC2) signal to camera to initiate and control exposure time.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PCLK and video signal from camera.
- DCF used: [HVF31CL1024x768_10bitRGBAsync.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 mode settings:** Set the camera mode to **Trigger Mode = Continuous** using the camera manufacturer's configuration tool.

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Specifics about the
interface modes

Camera Interface Details (cont.)

Mode 2: Pseudo-continuous

- **Frame Rate/Exposure time:** The frame rate is determined by the EXPOSURE1 (CC2) 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 (CC2) 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 mode settings:** Set the camera mode to **Trigger Mode = Mode 1** using the camera manufacturer's configuration tool.

Mode 3: Asynchronous reset

- **Frame Rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The width (falling edge to rising edge) of the EXPOSURE1 (CC2) 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 mode settings:** Same as Mode 2: Pseudo-continuous.

Cabling Requirements

Modes 1 and 2: Continuous and Pseudo-continuous

- **Cable and Connection:** Standard Camera Link.

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 --

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, 2007-2011.

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