

Matrox Helios eCL/XCL

Camera Interface Application Note

HITACHI KP-F120CL

November 1, 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: $1392 \times 1040 \times 10\text{-bit}$ @ up to 190 fps.
- Camera Link BASE interface (dual tap).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 28.8 MHz pixel clock rate.

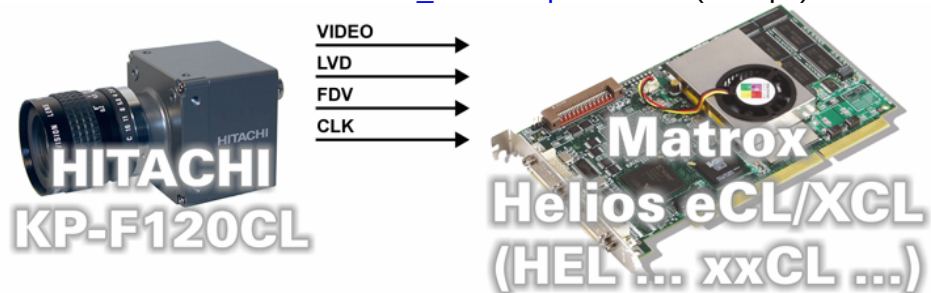
Interface Mode

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

Camera Interface Briefs

Mode 1: Continuous

- $1392 \times 1040 \times 10\text{-bit}$ @ 30 fps.
- $1392 \times 256 \times 10\text{-bit}$ @ 120 fps.
- Camera Link BASE interface (dual tap).
- Progressive scan.
- Matrox Helios eCL/XCL receiving LDV, FDV, CLK and video signal from camera.
- DCF used: [KPF120CL1392x1040_10bit2TapCon.DCF](#) (30 fps)
- DCF used: [KPF120CL1392x256_10bit2TapCon.DCF](#) (120 fps)



Mode 2: Pseudo-continuous

- $1392 \times 1040 \times 10\text{-bit}$.
- Camera Link BASE interface (dual tap).
- 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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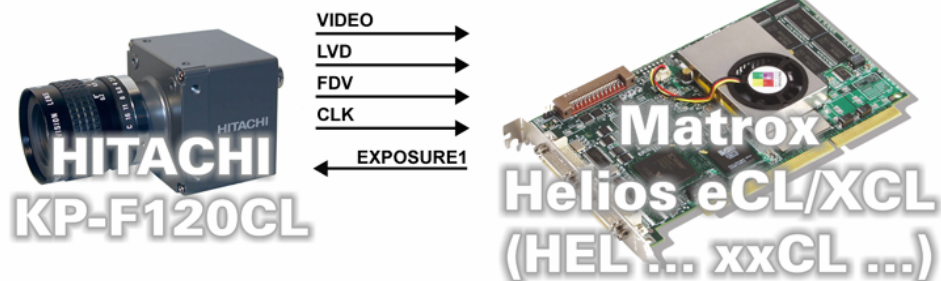
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Basics about the
interface modes

Camera Interface Briefs (cont.)

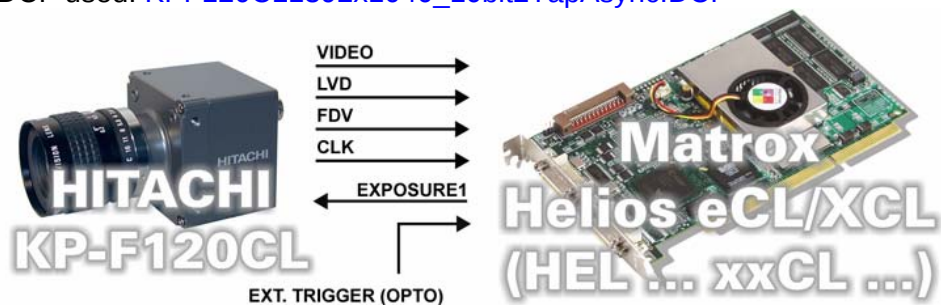
Mode 2: Pseudo-continuous

- DCF used: [KPF120CL1392x1040_10bit2TapPcon.DCF](#)



Mode 3: Asynchronous reset

- 1392 × 1040 × 10-bit.
- Camera Link BASE interface (dual 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 signal from camera.
- DCF used: [KPF120CL1392x1040_10bit2TapAsync.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 up to 30 frames per second at full resolution or 120 fps (partial scanning).
- 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 **normal** using the camera manufacturer's configuration tool or by using the MIL MdigControl() function.

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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 (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 mode settings:** Set the camera mode to **one trigger** using the camera manufacturer's configuration tool or MIL MdigControl() function.

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 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, 2006-2011.

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