

Matrox Radiant eCL

Camera Interface Application Note

AnaFocus AFHS8K-PCL

December 21, 2010

Basics about the camera

Camera Descriptions

- Effective resolution: $144 \times 144 \times 8\text{-bit}$ @ 8000 fps.
- Camera Link BASE interface (Triple tap).
- Sensor: Monochrome CMOS Smart Image Sensor.
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 66 MHz pixel clock rate.

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

Interface Mode

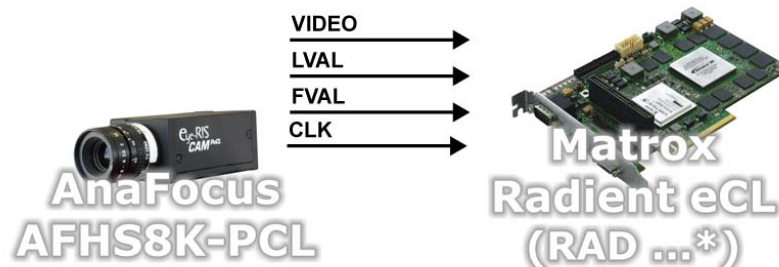
- Continuous (Normal Mode)
- Pseudo-continuous (Pulse Width Trigger Mode)
- Asynchronous reset (Pulse Width Trigger Mode)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- $144 \times 144 \times 8\text{-bit}$ @ 8000 fps.
- Camera Link BASE interface (Triple tap).
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 66 MHz) and video from camera.
- DCF used: [AFHS8K-PCL_144x144_8bit3TapCon.DCF](#)



Mode 2: Pseudo-continuous

- $144 \times 144 \times 8\text{-bit}$.
- Camera Link BASE interface (Triple tap).
- Matrox Radiant eCL sending EXPOSURE1 (CC1) signal to camera to initiate and control the exposure.
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 66 MHz) and video from camera.
- DCF used: [AFHS8K-PCL_144x144_8bit3TapPcon.DCF](#)

Matrox Radiant eCL

Camera Interface Application Note

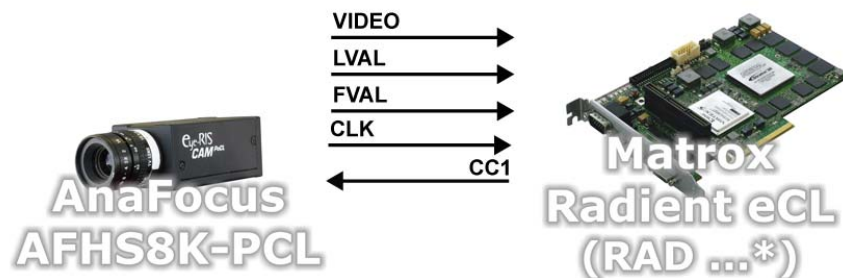
AnaFocus AFHS8K-PCL

December 21, 2010

Basics about the interface modes

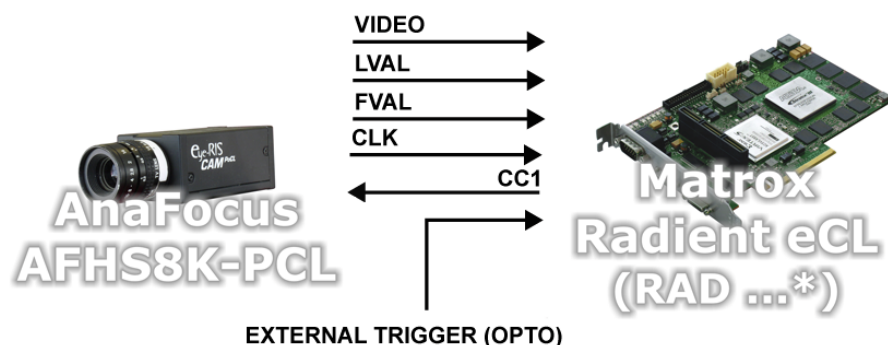
Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- 144 × 144 × 8-bit.
- Camera Link BASE interface (Triple tap).
- Matrox Radiant eCL receiving external trigger signal.
- Matrox Radiant eCL sending EXPOSURE1 (CC1) signal to camera to initiate and control the exposure.
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 66 MHz) and video from camera.
- DCF used: [AFHS8K-PCL_144x144_8bit3TapAsync.DCF](#)



Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Matrox Radiant eCL receives the continuous video from the camera at 8000 frames per second.
- **Exposure time:** Exposure time is set using the Camera Configuration utility. Refer to the camera manual for more information.
- **Camera settings:** Set the camera using the Camera Configuration Utility as follows: Trigger Mode = Continuous | Command: TR=0<CR>

Matrox Radiant eCL

Camera Interface Application Note

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Specifics about the interface modes

Camera Interface Details (cont.)

Mode 2: Pseudo-continuous

- **Frame rate:** The frame rate is determined by the frequency of the EXPOSURE1 (CC1) signal.
- **Exposure time:** The EXPOSURE1 (CC1) signal's active duration initiates and controls the camera's exposure time, which can be modified in the DCF by changing the Timer 1 active duration in Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera control settings:** Set the camera using the Camera Configuration Utility as follows: Trigger Mode = Pulse Width Trigger | Command: TR=2<CR>

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal. The period between the external trigger signals must be larger than the frame readout period plus the exposure time.
- **Exposure time:** Refer to Mode 2: Pseudo-continuous.
- **Camera settings:** Refer to Mode 2: Pseudo-continuous.

Cabling details for the interface modes

Cabling Requirements

Mode 1 and 2: Continuous and Pseudo-continuous

- **Cable and Connection:** One Mini-To-Mini Camera Link cable.

Mode 3: Asynchronous Reset

- **Cable and Connection:** One Mini-To-Mini Camera Link cable.
- **External trigger:** External trigger should be connected to the external auxiliary I/O (connector A on Matrox Radiant eCL bracket).

EXTERNAL AUX. I/O (connector A)

		External Trigger Source	
PIN NAME	PIN NO.	PIN NAME	PIN NO.
OPTO_AUX_IN0 +	15	SIGNAL	--
OPTO_AUX_IN0 -	09	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, 2010-2011.

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