

Matrox Radiant eCL

Camera Interface Application Note

Vieworks VC-4MC-C180E0

November 7, 2011

Basics about the camera

Camera Descriptions

- Effective resolution: $2048 \times 2048 \times 8$ or 10-bit @ up to 179.5 fps.
- Camera Link BASE/FULL interface (2, 8 or 10 tap).
- Sensor: CMOS with Bayer Color Filter.
- Progressive scan.
- Internal sync., Internal or external exposure control.
- 85 MHz pixel clock rate.

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

Interface Mode

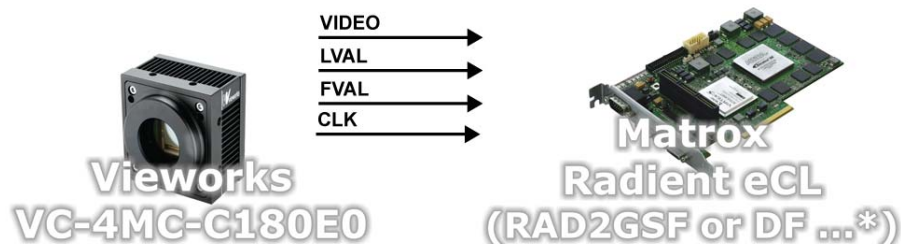
- Continuous (Continuous Mode)
- Pseudo-continuous (Pulse Width Trigger Mode)
- Asynchronous reset (Pulse Width Trigger Mode)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- $2048 \times 2048 \times 8$ or 10-bit @ up to 179.5 fps.
- Camera Link BASE/FULL interface (2, 8 or 10 tap).
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 85 MHz) and video from camera.
- DCF used: [VC-4MC-C180E0_2048x2048_10bit2tapBayerCon.DCF](#) (BASE interface)
- DCF used: [VC-4MC-C180E0_2048x2048_8bit8tapBayerCon.DCF](#) (FULL interface)
- DCF used: [VC-4MC-C180E0_2048x2048_8bit10tapBayerCon.DCF](#) (FULL interface)



Matrox Radiant eCL

Camera Interface Application Note

Vieworks VC-4MC-C180E0

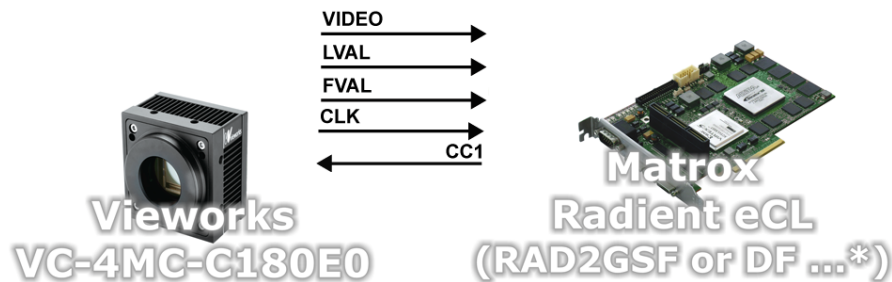
November 7, 2011

Basics about the interface modes

Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous

- 2048 × 2048 × 8 or 10-bit.
- Camera Link BASE/FULL interface (2, 8 or 10 tap).
- Matrox Radiant eCL sending TIMER 1 OUT (CC1) signal to camera to initiate and control the exposure. Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 85 MHz) and video from camera.
- DCF used: [VC-4MC-C180E0_2048x2048_10bit2tapBayerPcon.DCF](#) (BASE interface)
- DCF used: [VC-4MC-C180E0_2048x2048_8bit8tapBayerPcon.DCF](#) (FULL interface)
- DCF used: [VC-4MC-C180E0_2048x2048_8bit10tapBayerPcon.DCF](#) (FULL interface)



Mode 3: Asynchronous reset

- 2048 × 2048 × 8 or 10-bit.
- Camera Link BASE/FULL interface (2, 8 or 10 tap).
- Matrox Radiant eCL receiving external trigger signal.
- Matrox Radiant eCL sending TIMER 1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 85 MHz) and video from camera.
- DCF used: [VC-4MC-C180E0_2048x2048_10bit2tapBayerAsync.DCF](#) (BASE interface)
- DCF used: [VC-4MC-C180E0_2048x2048_8bit8tapBayerAsync.DCF](#) (FULL interface)
- DCF used: [VC-4MC-C180E0_2048x2048_8bit10tapBayerAsync.DCF](#) (FULL interface)

Matrox Radiant eCL

Camera Interface Application Note

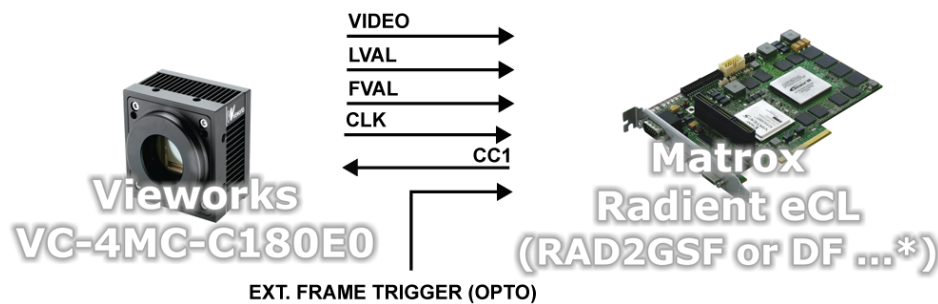
Vieworks VC-4MC-C180E0

November 7, 2011

Basics about the interface modes

Camera Interface Briefs (cont.)

Mode 3: Asynchronous reset



Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Matrox Radiant eCL receives the continuous video from the camera at up to 179.5 frames per second.
- **Exposure time:** Exposure time is set using Vieworks configuration utility. Refer to the camera manual for more information.
- **Bayer Color Filter:** Color information is generated by a Bayer color mosaic filter mounted on the sensor. Refer to the MIL online Help for information on using buffers with the Bayer color filter.
- **Camera control settings:** Set the camera using the Vieworks configuration utility to VIEW | Camera Link output | 2, 8 or 10 Tap. Data Bit 8 or 10 bit.

Mode 2: Pseudo-continuous

- **Frame rate:** The frame rate is determined by the frequency of the TIMER1 OUT (CC1) signal.
- **Exposure time:** The TIMER1 OUT (CC1) signal's active duration initiates and controls 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.
- **Bayer Color Filter:** Refer to Mode 1: Continuous.
- **Camera control settings:** Set the camera using the Vieworks configuration utility to VIEW | Camera Link output | 2, 8 or 10 Tap. Data Bit 8 or 10 bit MODE/EXP | External Sync Exposure: Pulse Width Source CC1 Port Polarity: Active High.

Matrox Radiant eCL

Camera Interface Application Note

Vieworks VC-4MC-C180E0

November 7, 2011

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. 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:** Two Standard-To-Mini Camera Link cables.

Mode 3: Asynchronous Reset

- **Cable and Connection:** Two Standard-To-Mini Camera Link cables.
- **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, 2011.

Matrox Electronic Systems Ltd.
1055 St. Regis Blvd.
Dorval, Quebec H9P 2T4
Canada
Tel: (514) 685-2630
Fax: (514) 822-6273