

Matrox Radiant eCL

Camera Interface Application Note

IMPERX ICL-B0610M-KC000

January 26, 2011

Basics about the camera

Camera Descriptions

- Effective resolution: $648 \times 488 \times 14\text{-bit}$ @ 138 fps.
- Camera Link BASE interface (Single tap).
- Progressive scan.
- Internal sync.
- External or internal exposure control.
- 50 MHz pixel clock rate.

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

Interface Mode

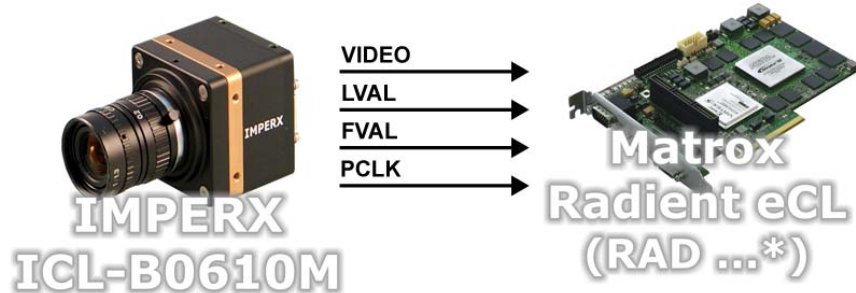
- Continuous (Free Running)
- Pseudo-continuous (Async Pulse Width)
- Asynchronous reset (Async Pulse Width)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- $648 \times 488 \times 14\text{-bit}$ @ 138 fps.
- Camera Link BASE interface (Single tap).
- Matrox Radiant eCL receiving LVAL, FVAL, CLK and video from camera.
- DCF used: [ICL-B0610-KC000_648x488x14bitCon.DCF](#)



Mode 2: Pseudo-continuous

- $648 \times 488 \times 14\text{-bit}$.
- Camera Link BASE interface (Single tap).
- Matrox Radiant eCL sending TIMER1 OUT (CC1) signal to camera to initiate and control the exposure time.
- Matrox Radiant eCL receiving LVAL, FVAL, CLK and video from camera.
- DCF used: [ICL-B0610-KC000_648x488x14bitPcon.DCF](#)

Matrox Radiant eCL

Camera Interface Application Note

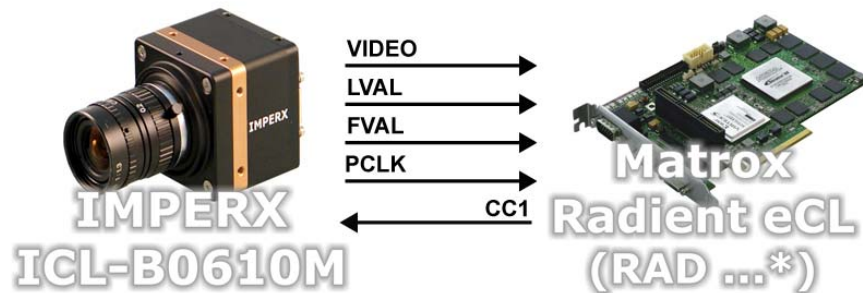
IMPERX ICL-B0610M-KC000

January 26, 2011

Basics about the interface modes

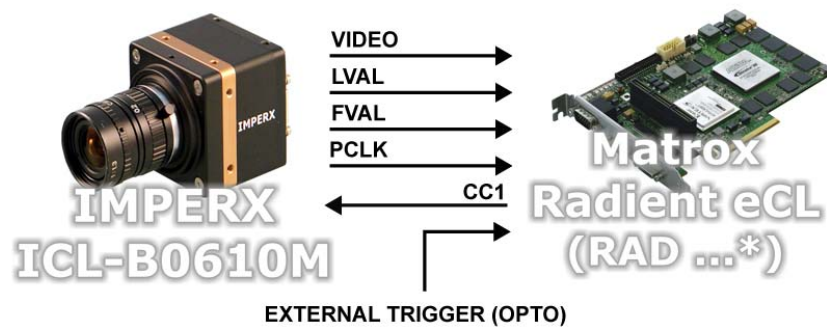
Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- $648 \times 488 \times 14$ -bit.
- Camera Link BASE interface (Single tap).
- Matrox Radiant eCL receiving external OPTO trigger signal.
- Matrox Radiant eCL sending TIMER1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Radiant eCL receiving LVAL, FVAL, CLK and video from camera.
- DCF used: [ICL-B0610-KC000_648x488x14bitAsync.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 138 frames per second.
- **Exposure time:** Exposure time is set using the Imperx Bobcat Camera Configuration Utility. Refer to the camera manual for commands description and usage.

Matrox Radiant eCL

Camera Interface Application Note

IMPERX ICL-B0610M-KC000

January 26, 2011

Specifics about the interface modes

Camera Interface Details (cont.)

Mode 1: Continuous

- **Camera configuration:** The camera mode is set as follows using the Imperx Bobcat Camera Configuration Utility. Refer to the camera manual for commands description and usage: Taps = Single Tap | Data Format = 1 Tap Single | Speed = Fast | Bit Depth = 14-bit | Shift = Shift 0 | Trigger = OFF | AOI/AOI#1 = 648x488

Mode 2: Pseudo-continuous

- **Frame rate:** The frame rate is determined by the frequency of the TIMER1 OUT (CC1) signal.
- **Exposure time:** The exposure is determined by the active duration of TIMER1 OUT (CC1), which can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera configuration:** The camera mode is set as follows using the Imperx Bobcat Camera Configuration Utility. Refer to the camera manual for commands description and usage: Taps = Single Tap | Data Format = 1 Tap Single | Speed = Fast | Bit Depth = 14-bit | Shift = Shift 0 | Trigger = CC | Trigger Mode = Async | Trigger Edge = Rising | Exp/Exp Ctrl = Pulse Width | AOI/AOI#1 = 648x488

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 configuration:** 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.

Matrox Radiant eCL

Camera Interface Application Note

IMPERX ICL-B0610M-KC000

January 26, 2011

Cabling details for the interface
modes

Cabling Requirements (cont.)

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)

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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