

# Matrox Radiant eCL

## Camera Interface Application Note

Sentech STC-CLC500A

January 26, 2011

### Basics about the camera

#### Camera Descriptions

- Effective resolution:  $2448 \times 2058 \times 12\text{-bit}$  @ 16 fps.
- Camera Link BASE interface (Dual tap).
- Bayer Color Filter.
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 64 MHz pixel clock rate.

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

#### Interface Mode

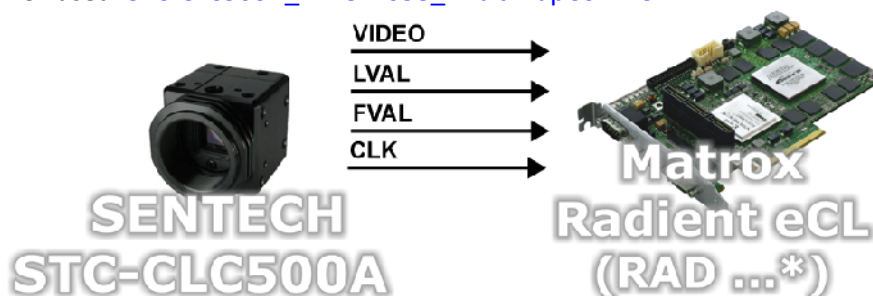
- Continuous (Free Running)
- Pseudo-continuous (Pulse Width Trigger Mode)
- Asynchronous reset (Pulse Width Trigger Mode)

### Basics about the interface modes

#### Camera Interface Briefs

##### Mode 1: Continuous

- $2448 \times 2058 \times 12\text{-bit}$  @ 16 fps.
- Camera Link BASE interface (Dual tap).
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 64 MHz) and video from camera.
- DCF used: [STC-CLC500A\\_2448x2058\\_12bit2TapCon.DCF](#)



##### Mode 2: Pseudo-continuous

- $2448 \times 2058 \times 12\text{-bit}$ .
- Camera Link BASE interface (Dual tap).
- Matrox Radiant eCL sending EXPOSURE 1 (CC1) signal to camera to initiate and control the exposure.
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 64 MHz) and video from camera.
- DCF used: [STC-CLC500A\\_2448x2058\\_12bit2TapPcon.DCF](#)

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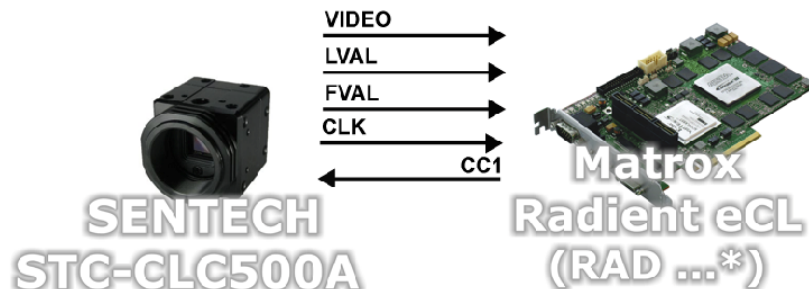
Sentech STC-CLC500A

January 26, 2011

Basics about the interface modes

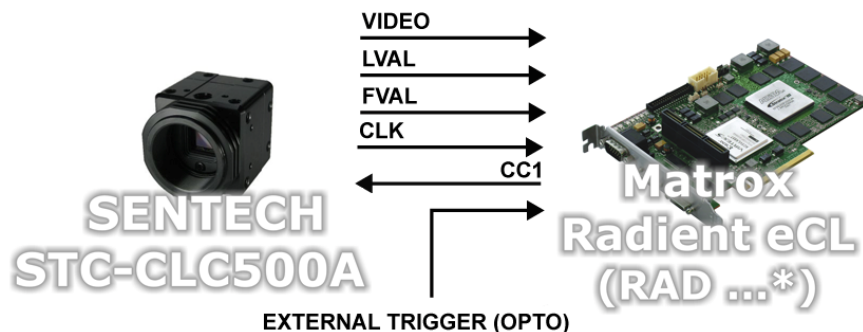
### Camera Interface Briefs (cont.)

#### Mode 2: Pseudo-continuous



#### Mode 3: Asynchronous reset

- 2448 × 2058 × 12-bit.
- Camera Link BASE interface (Dual tap).
- Matrox Radiant eCL receiving external trigger signal.
- Matrox Radiant eCL sending EXPOSURE 1 (CC1) signal to camera to initiate and control the exposure.
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 64 MHz) and video from camera.
- DCF used: [STC-CLC500A\\_2448x2058\\_12bit2TapAsync.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 16 frames per second.
- **Exposure time:** Exposure time is set using the Sentech CLCtrl Camera Configuration utility. Refer to the camera manual for more information.
- **Camera settings:** Set the camera using the Sentech CLCtrl Camera Configuration Utility as follows: Trigger Mode = Continuous | Output Mode = 12-bit

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Sentech STC-CLC500A

January 26, 2011

*Specifics about the interface modes*

### Camera Interface Details (cont.)

#### *Mode 1: Continuous*

- **Bayer Color Filter:** Color information is generated by a Bayer color mosaic filter mounted on the sensor. Color information can be obtained by converting from Bayer to RGB by using the board's hardware (if available), or by using a software-based conversion (i.e., MIL function calls) on the Host. Following each frame capture it will be necessary to make a call to your MIL/MIL-Lite program in order to reconstruct the proper color image. This may introduce processing time by the host computer, which will reduce the effective acquisition rate. For more information, contact your local Sales representative or Matrox Imaging Technical Support.

#### *Mode 2: Pseudo-continuous*

- **Frame rate:** The frame rate is determined by the frequency of the EXPOSURE 1 (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 | Output Mode = 12-bit | Trigger Reset Mode = V-Reset
- **Bayer Color Filter:** Refer to Mode 1: Continuous.

#### *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.
- **Bayer Color Filter:** Refer to Mode 2: Pseudo-continuous.

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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)**

| PIN NAME       |  | PIN NO. |   | External Trigger Source |         |
|----------------|--|---------|---|-------------------------|---------|
|                |  |         |   | 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.

#### **Matrox Electronic Systems Ltd.**

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