

# Matrox Radiant eCL

## Camera Interface Application Note

Sentech STC-CMB2MCL

December 20, 2011

### Basics about the camera

#### Camera Descriptions

- Effective resolution: 2048 x 1088 x 8 and 10 bit @ up to 340 fps.
- Camera Link BASE & FULL interface (2, 4, 8 and 10 tap).
- 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

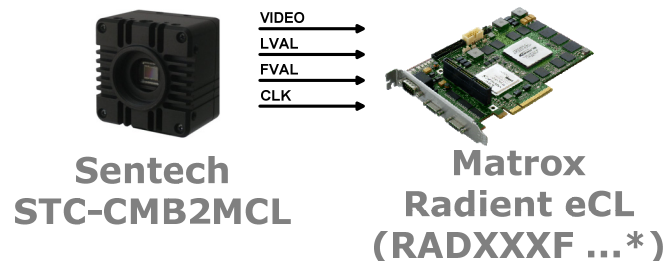
- Continuous (Continuous Mode)
- Pseudo-continuous (Pulse Width Trigger Mode)
- Asynchronous reset (Pulse Width Trigger Mode)

### Basics about the interface modes

#### Camera Interface Briefs

##### Mode 1: Continuous

- 2048 x 1088 x 8 and 10 bit @ up to 340 fps.
- Camera Link BASE & FULL interface (2, 4, 8 and 10 tap).
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 85 MHz) and video from camera.
- DCF used: [STC-CMB2MCL2048x1088\\_8bit2TapCon.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_10bit4TapCon.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_8bit8TapCon.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_8bit10TapCon.DCF](#)



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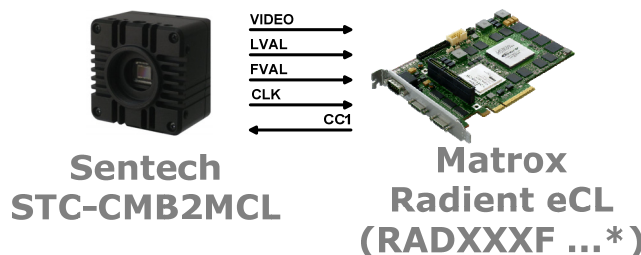
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Basics about the interface modes

### Camera Interface Briefs (cont.)

#### Mode 2: Pseudo-continuous

- 2048 x 1088 x 8 and 10 bit.
- Camera Link BASE & FULL interface (2, 4, 8 and 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: [STC-CMB2MCL2048x1088\\_8bit2TapPCon.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_10bit4TapPCon.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_8bit8TapPCon.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_8bit10TapPCon.DCF](#)



#### Mode 3: Asynchronous reset

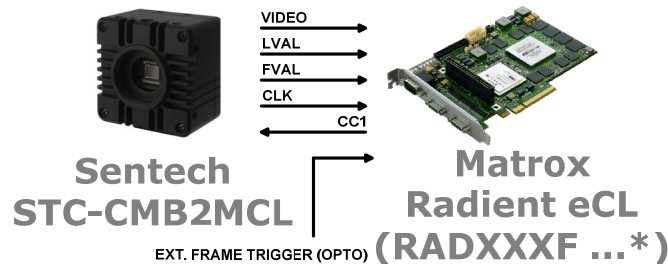
- 2048 x 1088 x 8 and 10 bit.
- Camera Link BASE & FULL interface (2, 4, 8 and 10 tap).
- Matrox Radiant eCL receiving external trigger signal.
- Matrox Radiant eCL sending TIMER 1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Radiant eCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 85 MHz) and video from camera.
- DCF used: [STC-CMB2MCL2048x1088\\_8bit2TapAsync.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_10bit4TapAsync.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_8bit8TapAsync.DCF](#)
- DCF used: [STC-CMB2MCL2048x1088\\_8bit10TapAsync.DCF](#)

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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 340 frames per second.
- **Exposure time:** Exposure time is set using Sentech CLCtrl2 configuration utility. Refer to the camera manual for more information.
- **Camera control settings:** Set the camera using the Sentech CLCtrl2 configuration utility to:

| Continue/Trigger Shutter Mode | Continue Mode   |
|-------------------------------|-----------------|
| Output Format Selector        | 8 or 10 bit     |
| TAB Count and FPS             | 2 Tap (75FPS)   |
|                               | 4 Tap (150FPS)  |
|                               | 8 Tap (300FPS)  |
|                               | 10 Tap (340FPS) |

#### 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.

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## Camera Interface Application Note

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*Specifics about the interface modes*

### Camera Interface Details (cont.)

- **Camera control settings:** Set the camera using the Sentech CLCtrl2 configuration utility to:

|                               |                                                                      |
|-------------------------------|----------------------------------------------------------------------|
| Trigger Mode                  | Pulse Width                                                          |
| Trigger Polarity              | Positive                                                             |
| Trigger Input Selection       | CC1                                                                  |
| Continue/Trigger Shutter Mode | Trigger Shutter Mode<br>(Long Time Exposure)                         |
| Output Format Selector        | 8 or 10 bit                                                          |
| TAB Count and FPS             | 2 Tap (75FPS)<br>4 Tap (150FPS)<br>8 Tap (300FPS)<br>10 Tap (340FPS) |

### 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.

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## Camera Interface Application Note

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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)

| 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, 2011.

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