Matrox Helios eCL/XCL

Camera Interface Application Note

Sentech STC-CL152A

March 16, 2011

Basics about the camera

Camera Descriptions

- Effective resolution: 1360 × 1040 × 10-bit @ 20 fps.
- Camera Link BASE interface (Single tap).
- Progressive scan.
- Internal sync.
- Internal or external exposure control.
- 28.6363 MHz pixel clock rate.

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

Interface Mode

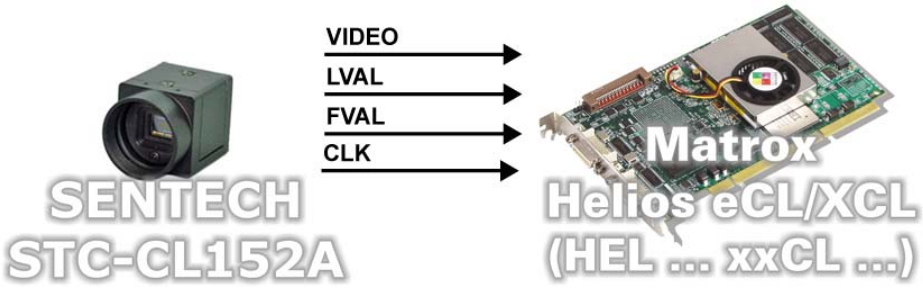
- Continuous (Continuous Mode)
- Pseudo-continuous (Pulse Width Trigger Mode)
- Asynchronous reset (Pulse Width Trigger Mode)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 1360 × 1040 × 10-bit @ 20 fps.
- Camera Link BASE interface (Single tap).
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 28.6363 MHz) and video from camera.
- DCF used: STCCL152A_1360x1040_10bitCon.DCF



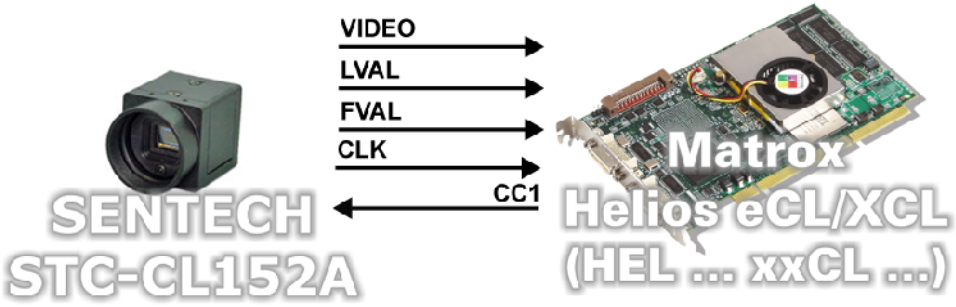
Mode 2: Pseudo-continuous

- 1360 × 1040 × 10-bit.
- Camera Link BASE interface (Single tap).
- Matrox Helios eCL/XCL sending TIMER 1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 28.6363 MHz) and video from camera.
- DCF used: STCCL152A_1360x1040_10bitPcon.DCF

Basics about the interface modes

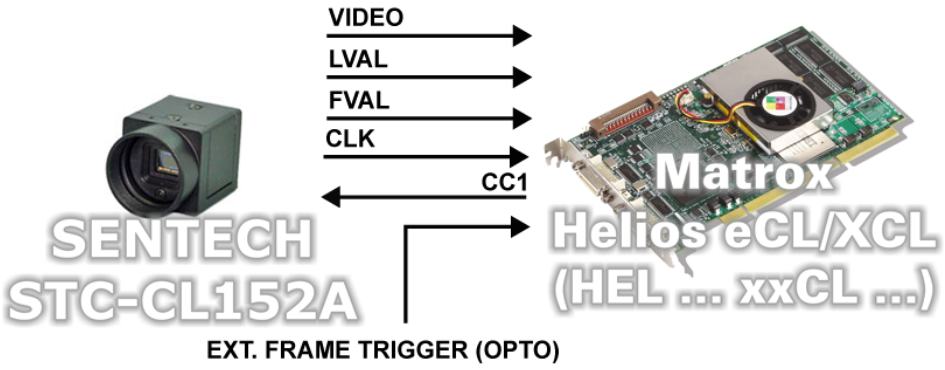
Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- 1360 × 1040 × 10-bit.
- Camera Link BASE interface (Single tap).
- Matrox Helios eCL/XCL receiving external trigger signal.
- Matrox Helios eCL/XCL sending TIMER 1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Helios eCL/XCL receiving LVAL, FVAL, PIXEL CLOCK (CLK @ 28.6363 MHz) and video from camera.
- DCF used: STCCL152A_1360x1040_10bitAsync.DCF



Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Matrox Helios eCL/XCL receives the continuous video from the camera at 20 frames per second.
- **Exposure time:** Exposure time is set using the integration time setting in the Camera Configuration utility. Refer to the camera manual for more information.

Specifics about the interface modes

Camera Interface Details (cont.)

Mode 1: Continuous

- **Camera control settings:** Set the camera using the Sentech SOF-Cube Camera Configuration Utility as follows: Trigger Mode = Normal | Output Mode = 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.
- **Camera control settings:** Set the camera using the Sentech SOF-Cube Camera Configuration Utility as follows: Trigger Mode = Pulse Width Trigger | Output Mode = 10-bit | Trigger Reset Mode = V-Reset

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 Standard-To-Mini Camera Link cable.

Cabling details for the interface modes

Cabling Requirements (cont.)

Mode 3: Asynchronous Reset

- **Cable and Connection:** One Standard-To-Mini Camera Link cable.
- **External trigger:** External trigger should be connected to the external auxiliary I/O (connector 1 on cable adapter bracket).

EXTERNAL AUX. I/O (connector 1)			**External Trigger Source**	
PIN NAME	PIN NO.		PIN NAME	PIN NO.
P0_OPTO_AUX_IN0 +	07	←	SIGNAL	--
P0_OPTO_AUX_IN0 -	02	←	GROUND	--

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