

# Matrox Solios eCL/XCL

## Camera Interface Application Note

### BASLER A504k

January 7, 2009

Basics about the  
camera

#### Camera Descriptions

- Effective resolution:  $1280 \times 1024 \times 8\text{-bit}$  @ 500 fps.
- Camera Link FULL interface (Ten taps).
- Progressive scan.
- Internal sync.
- External or internal exposure control.
- 67.58 MHz pixel clock rate.

NOTE the DCFs for this interface require the use of the 85 MHz version Matrox Solios (SOL 6M FCxx series)

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

#### Interface Mode

- Continuous
- Pseudo-continuous
- Asynchronous reset (EXSYNC Level-controlled)

Basics about the  
interface modes

#### Camera Interface Briefs

##### Mode 1: Continuous

- $1280 \times 1024 \times 8\text{-bit}$  @ 500 fps.
- Camera Link FULL interface (Ten taps).
- Progressive scan.
- Matrox Solios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [A504k\\_1280x1024\\_8bit10tapsCon.DCF](#)



VIDEO  
LVAL  
FVAL  
PCLK



##### Mode 2: Pseudo-Continuous

- $1280 \times 1024 \times 8\text{-bit}$ .
- Camera Link FULL interface (Ten taps).
- Progressive scan.
- Matrox Solios eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Solios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [A504k\\_1280x1024\\_8bit10tapsPcon.DCF](#)

Continued...

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## Camera Interface Application Note

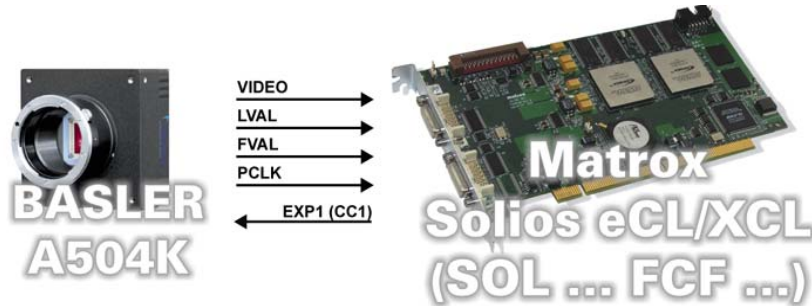
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Basics about the  
interface modes

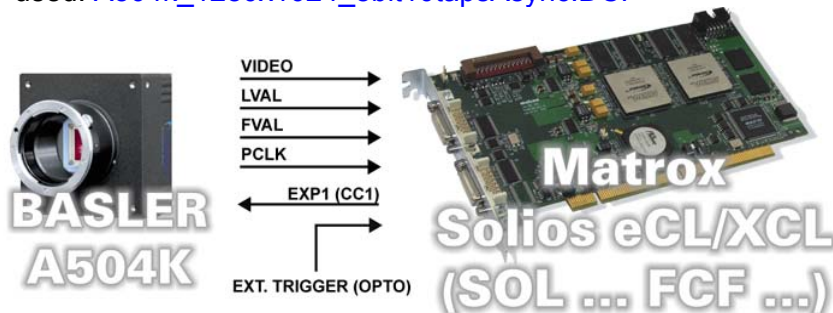
#### Camera Interface Briefs (cont.)

##### Mode 2: Pseudo-Continuous



##### Mode 3: Asynchronous reset

- 1280 × 1024 × 8-bit.
- Camera Link FULL interface (Ten taps).
- Progressive scan.
- Matrox Solios eCL/XCL receiving external trigger signal.
- Matrox Solios eCL/XCL sending TIMER1 OUT (CC1) signal to camera to initiate and control the exposure.
- Matrox Solios eCL/XCL receiving LVAL, FVAL, PCLK and video from camera.
- DCF used: [A504k\\_1280x1024\\_8bit10tapsAsync.DCF](#)



Specifics about  
the interface modes

#### Camera Interface Details

##### Mode 1: Continuous

- **Frame Rate:** Matrox Solios eCL/XCL receives the continuous video from the camera at 500 frames per second.
- **Exposure time:** Exposure time is set using the shutter speed setting in the Camera Configuration Utility. Refer to the camera manual for more information.
- **Camera control settings:** Using the Basler Camera Configuration Tool Plus (CCT+), set the camera controls as follows:

| Control                               | Setting                                |
|---------------------------------------|----------------------------------------|
| Output / Video Data Output mode       | 10 taps 8 Bits (CL Full Configuration) |
| Exposure / Exposure Time Control mode | Free Run, Programmable                 |

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## Camera Interface Application Note

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Specifics about the  
interface modes

#### Camera Interface Details (cont.)

##### Mode 2: Pseudo-Continuous

- **Frame rate:** The frame rate is determined by the frequency of the TIMER1 OUT (CC1) signal.
- **Exposure time:** The width (falling to rising edge) of the TIMER1 OUT (CC1) signal is 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:** Using the Basler Camera Configuration Tool Plus (CCT+), set the camera controls as follows:

| Control                               | Setting                                |
|---------------------------------------|----------------------------------------|
| Output / Video Data Output mode       | 10 taps 8 Bits (CL Full Configuration) |
| Exposure / Exposure Time Control mode | ExSync, Level-controlled               |

##### Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** Refer to Mode 2: Pseudo-Continuous.
- **Camera control settings:** Refer to Mode 2: Pseudo-Continuous.

#### Cabling Requirements

##### Modes 1 and 2: Continuous, Pseudo-continuous

- **Cable and Connection:** Two MDR26 Camera Link cables.

##### Mode 3: Asynchronous reset

- **Cable and Connection:** Two MDR26 Camera Link cables.
- **External trigger:** External trigger should be connected to the OPTO TRIG input of the 9-pin connector (pins 7 and 2) on the Expanded I/O adapter bracket.

##### EXPANDED I/O BRACKET (9-pin connector)

|            |    |   | External Trigger Source |    |
|------------|----|---|-------------------------|----|
| OPTOTRIG + | 07 | ← | LINE SIGNAL             | -- |
| OPTOTRIG - | 02 | ← | LINE GROUND             | -- |

Cabling details for the  
interface modes

Cabling details for the  
interface modes

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, 2009-2011.

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