

Matrox Solios eA/XA

Camera Interface Application Note

SENTECH STC-A33A

August 2, 2007

Basics about the camera

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

Basics about the interface modes

Camera Descriptions

- Effective resolution: $648 \times 494 \times 8\text{-bit}$ @ 60 fps.
- Analog monochrome video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 24.54 MHz pixel clock rate.

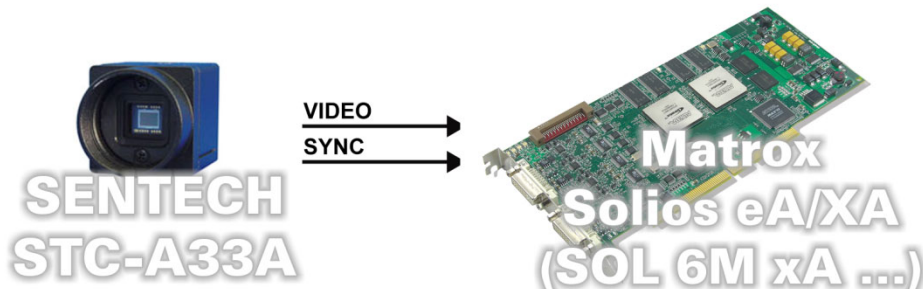
Interface Mode

- Continuous
- Pseudo- continuous (Pulse Width Trigger with V-Reset)
- Asynchronous reset (Pulse Width Trigger with V-Reset)

Camera Interface Briefs

Mode 1: Continuous

- $648 \times 494 \times 8\text{-bit}$ @ 60 fps.
- Analog monochrome video.
- Matrox Solios eA/XA receiving Sync and video signals from camera.
- DCF used: [STCA33A_648x494Con.DCF](#)



Mode 2: Pseudo-continuous

- Up to $648 \times 494 \times 8\text{-bit}$.
- Analog monochrome video
- Matrox Solios eA/XA sending EXPOSURE1 (TRIG) signal to camera to initiate and control the exposure.
- Matrox Solios eA/XA receiving Sync and video signals from camera.
- DCF used: [STCA33A_648x494Pcon.DCF](#)

Continued...

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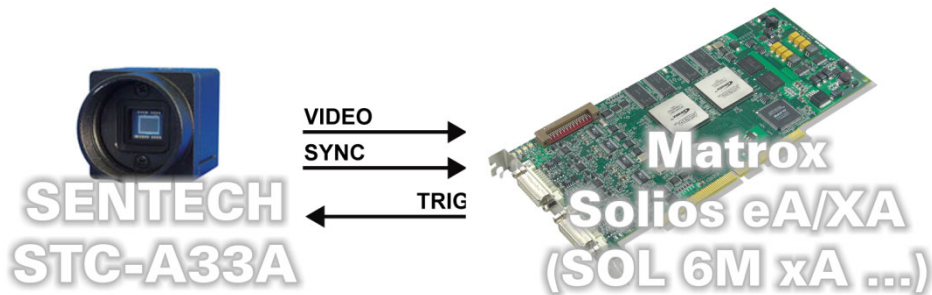
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Basics about the
interface modes

Camera Interface Briefs

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- Up to $648 \times 494 \times 8$ -bit.
- Analog monochrome video
- Matrox Solios eA/XA receiving external trigger signal.
- Matrox Solios eA/XA sending EXPOSURE1 (TRIG) signal to camera to initiate and control the exposure.
- Matrox Solios eA/XA receiving Sync and video signals from camera.
- DCF used: [STCA33A_648x494Async.DCF](#)

Specifics about the
interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Matrox Solios eA/XA receives the continuous video from the camera at 60 frames per second.
- **Exposure time:** Exposure time is inversely proportionate to the frame rate (no shutter) or determined by the shutter setting. Refer to the camera manual for more information.

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Specifics about the
interface modes

Camera Interface Details (cont.)

Mode 1: Continuous

- **Camera switch settings:** Refer to the camera manual for additional information. External and internal switches for this mode should be set as follows:

External DIP Switch settings									
1	2	3	4	5	6	7	8	9	10
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Internal Sync. Mode Switch: Set to INTERNAL									

Mode 2: Pseudo-continuous

- **Frame rate:** The Frame Rate is determined by the frequency of Timer1. The maximum possible frame rate is dependent on the exposure time as well as the camera's frame readout period.
- **Exposure time:** The width (active duration) of the EXPOSURE1 (TRIG) 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 settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

External DIP Switch settings									
1	2	3	4	5	6	7	8	9	10
OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
Internal Sync. Mode Switch: Set to EXTERNAL									

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal. The maximum possible frame rate is dependent on the exposure time as well as the camera's frame readout period.
- **Exposure time:** The width (active duration) of the EXPOSURE1 (TRIG) 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 settings:** Refer to *Mode 2: Pseudo-continuous*.

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Cabling details for the
interface modes

Cabling Requirements

Mode 1: Continuous

- **Cable and Connection:** DVI-TO-8BNC/O (open ended) cable required for video and synchronization signals. The connections between the camera's 12-pin connector and the DVI connector of the Matrox Solios eA/XA are as follows:

Matrox Solios eA/XA (DVI analog input connector-0)		SENTECH STC-A33A (12-pin connector)	
Pin name	Pin no.	Pin name	Pin no.
CH0_INPUTA	C1	VIDEO	04
GROUND	C5	VIDEO OUT GROUND	03

Mode 2: Pseudo-continuous

- **Cable and Connection:** DVI-TO-8BNC/O (open ended) cable required for video and synchronization signals. The connections between the camera's 12-pin connector and the DVI connector of the Matrox Solios eA/XA are as follows:

Matrox Solios eA/XA (DVI analog input connector-0)		SENTECH STC-A33A (12-pin connector)	
Pin name	Pin no.	Pin name	Pin no.
CH0_INPUTA	C1	VIDEO	04
GROUND	C5	VIDEO OUT GROUND	03
P0_TTL_AUX (EXP_OUT)	23	TRIG IN	11
GROUND	11	TRIG IN GROUND	12

Mode 3: Asynchronous reset

- **Cable and Connection:** DVI-TO-8BNC/O (open end) cable required for video signal. The connection between the 12-pin connector of the camera and the Matrox Solios are as follow:

Matrox Odyssey (DVI analog input connector-0)		SENTECH STC-A33A (12-pin connector)	
Pin name	Pin no.	Pin name	Pin no.
CH0_INPUTA	C1	VIDEO	04
GROUND	C5	VIDEO OUT GROUND	03
P0_TTL_AUX (EXP_OUT)	23	TRIG IN	11
GROUND	11	TRIG IN GROUND	12

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*Cabling details for the
interface modes*

Cabling Requirements

Modes 1 and 2: Continuous/ Pseudo-continuous

- **Cable:** DVI-TO-8BNC/O (open ended) cable required for video and synchronization signals.
- **Connection:** Connections between the camera's 12-pin connector and the DVI connector of the Matrox Solios eA/XA are as follows:

SENTECH STC-A33A (12-pin connector)			Matrox Solios eA/XA (DVI connector 0)	
Pin name	Pin no.		Pin name	Pin no.
VIDEO	04	→	CH0_INPUTA	C1
TRIG IN	10**	←	CH0_EXPOSURE	23**

* SYNC on Green

** This connection is not necessary for these modes however it allows the same cable to be used with all modes.

Mode 3: Asynchronous reset

- **Cable:** DVI-TO-8BNC/O (open ended) cable required for video, synchronization and control signals.
- **External trigger:** External trigger should be connected to the OPTO TRIG input of the 9-pin connector (pins 2 and 7) on the external trigger input connector 1 (cable adapter board).

External trigger input (9-pin connector)			External Trigger Source	
OPTO TRIG+	07	←	SIGNAL	--
OPTO TRIG-	02	←	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, 2007-2011.

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