

Matrox Solios eA/XA

Camera Interface Application Note

SONY XC-56

June 19, 2009

Basics about the camera

Camera Descriptions

- Effective resolution: $659 \times 494 \times 8\text{-bit}$ @ 30 or 30 fps.
- Single channel analog video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 12.2727 MHz pixel clock rate.

Interface Modes

- Continuous
- Continuous (Master mode)
- Pseudo-continuous (Master mode)
- Asynchronous reset (Master mode)

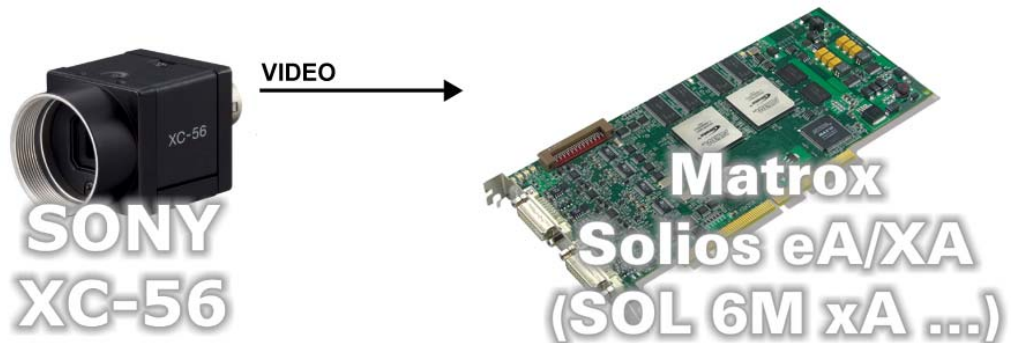
Camera Interface Briefs

Mode 1: Continuous

- $646 \times 492 \times 8\text{-bit}$ @ 30 fps.
- Single channel analog video.
- Progressive scan.
- Matrox Solios eA/XA receiving video signal from camera.
- DCF used: [XC-56_646x492_8bitProgCon.DCF](#)

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

Basics about the interface modes



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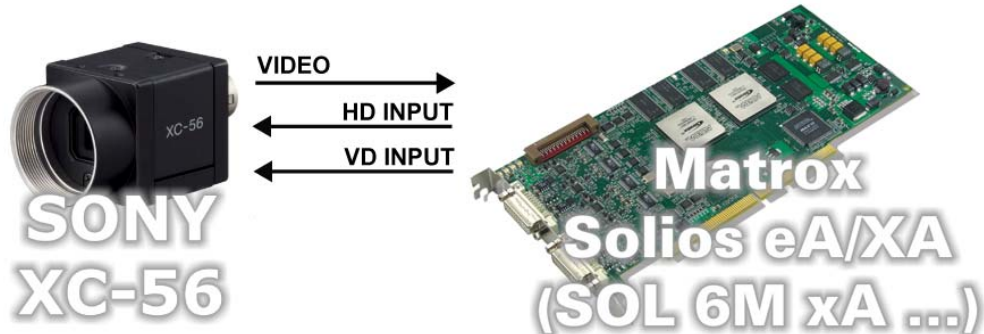
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Basics about the
interface modes

Camera Interface Briefs

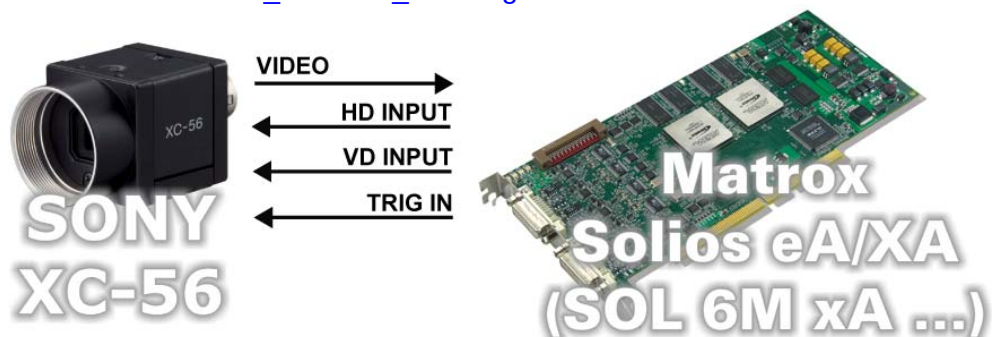
Mode 2: Continuous (Master Mode)

- $646 \times 492 \times 8\text{-bit}$ @ 30 fps.
- Single channel analog video.
- Progressive scan.
- Matrox Solios eA/XA sending HSYNC (HD) and VSYNC (VD) signals to camera.
- Matrox Solios eA/XA receiving video signal from camera.
- DCF used: [XC-56_646x492_8bitProgMasterCon.DCF](#)



Mode 3: Pseudo-continuous (Master Mode)

- $646 \times 492 \times 8\text{-bit}$.
- Single channel analog video.
- Progressive scan.
- Matrox Solios eA/XA sending HSYNC (HD) and VSYNC (VD) signals to camera.
- Matrox Solios eA/XA sending periodic EXPOSURE1 (TRIG IN) signal to camera to initiate and control exposure time.
- Matrox Solios eA/XA receiving video signal (with sync) from camera.
- DCF used: [XC-56_646x492_8bitProgMasterPcon.DCF](#)



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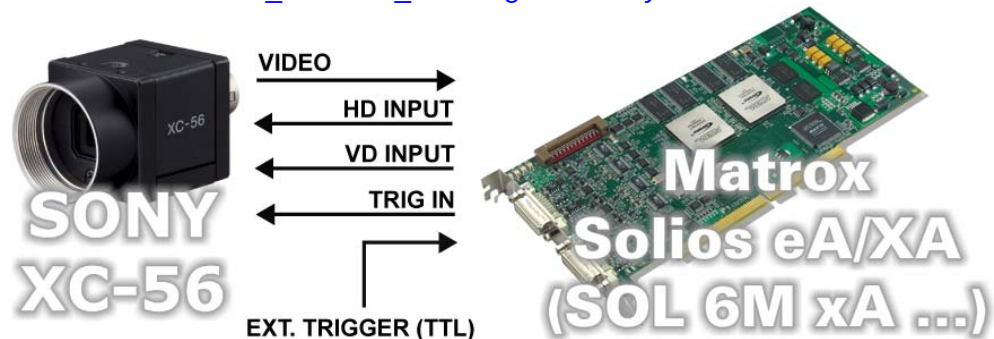
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Basics about the
interface modes

Camera Interface Briefs (Continued)

Mode 4: Asynchronous Reset (Master Mode)

- 646 × 492 × 8-bit.
- Single channel analog video.
- Progressive scan.
- Matrox Solios eA/XA sending HSYNC (HD) and VSYNC (VD) signals to camera.
- Matrox Solios eA/XA receiving external trigger signal.
- Matrox Solios eA/XA sending EXPOSURE1 (TRIG IN) signal to camera to initiate and control exposure time.
- Matrox Solios eA/XA receiving video signal (with sync) from camera.
- DCF used: [XC-56_646x492_8bitProgMasterAsync.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 30 frames per second.
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual for more information.
- **Camera Switch settings:** Internal synchronization switch and DIP switches are set as follows, refer to the camera manual for additional information:

Internal Sync Mode switch (SW1)	
1-SHUT	OFF
2- SHUT	OFF
3-SHUT	OFF
4-SHUT	OFF
5-HR	OFF
6-TRIG	OFF
7-TRIG	OFF
8- TRIG	OFF
9-FIX/M	OFF
0-BINNING	OFF
EXT INT	INT

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Specifics about the
interface modes

Camera Interface Details (Continued)

Mode 2: Continuous (Master Mode)

- **Frame Rate:** Matrox Solios eA/XA sends HSYNC (HD) and VSYNC (VD) signals periodically to camera and receives the continuous video from the camera at 30 frames per second.
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual for more information.
- **Camera Switch settings:** External synchronization switch and DIP switches are set as follows, refer to the camera manual for additional information:

Internal Sync Mode switch (SW1)	
1-SHUT	OFF
2- SHUT	OFF
3-SHUT	OFF
4-SHUT	OFF
5-HR	OFF
6-TRIG	OFF
7-TRIG	OFF
8- TRIG	OFF
9-FIX/M	OFF
0-BINNING	OFF
EXT INT	EXT

Mode 3: Pseudo-continuous (Master Mode)

- **Frame rate:** The frame rate is determined by the frequency of the EXPOSURE1 (TRIG IN) signal.
- **Exposure time:** The width (rising edge to falling edge) of the EXPOSURE1 (TRIG IN) signal equals the exposure time. The exposure time can be modified in the DCF using Matrox Intellicam or with the MIL digitizer control function **MdigControl()**. Refer to the appropriate manual or user guide for more information.
- **Camera Switch settings:** Internal/External synchronization switch and DIP switches are set as follows, refer to the camera manual for additional information:

Internal Sync Mode switch (SW1)	
1-SHUT	OFF
2- SHUT	OFF
3-SHUT	OFF
4-SHUT	OFF
5-HR	OFF
6-TRIG	OFF
7-TRIG	ON
8- TRIG	ON
9-FIX/M	OFF
0-BINNING	OFF
EXT INT	EXT

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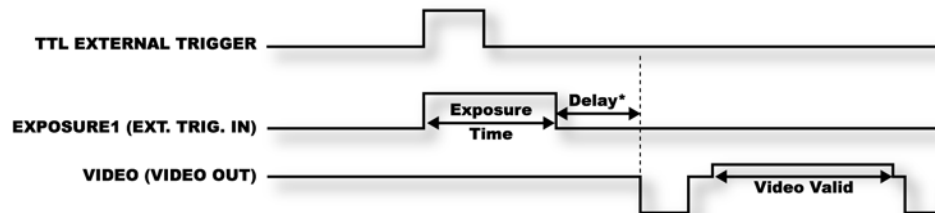
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Specifics about the
interface modes

Camera Interface Details (Continued)

Mode 3: Pseudo-continuous (Master Mode)

- Timing diagram:



Mode 4: Asynchronous Reset (Master Mode)

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** Refer to Mode 3: Pseudo-continuous.
- **Camera Switch settings:** Refer to Mode 3: Pseudo-continuous.
- **Timing diagram:** Refer to Mode 3: Pseudo-continuous.

Cabling Requirements

Mode 1: Continuous

- **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 eA/XA are as follow:

Matrox Solios eA/XA

(DVI analog input connector-0)

SONY XC-56

(12-pin connector)

Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO OUTPUT	04

Mode 2: Continuous (Master Mode)

- **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 eA/XA are as follow:

Matrox Solios eA/XA

(DVI analog input connector-0)

SONY XC-56

(12-pin connector)

Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO OUTPUT	04
P0_LVDS/TTL_CHSYNC_IO+	13	→	HD INPUT	06
P0_LVDS/TTL_VSYNC_IO+	05	→	VD INPUT	07
CH0_EXPOSURE	23	→	TRIG IN	11

Cabling details for the
interface modes

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Mode 4: Asynchronous Reset (Master Mode)

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CH0_EXPOSURE	23	→	TRIG IN	11

- **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 Electronic Systems, 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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