

Matrox Solios eA/XA

Camera Interface Application Note

CIS VCC-G20S20

November 9, 2009

*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: $1360 \times 1040 \times 8\text{-bit}$ @ 15 fps.
- Analog monochrome video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 28.6360 MHz pixel clock rate.

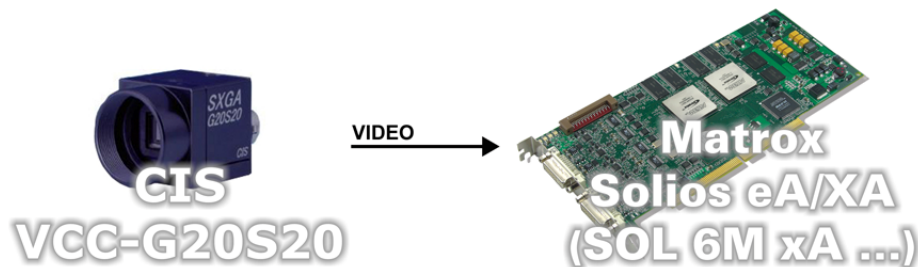
Interface Mode

- Continuous
- Pseudo- continuous (External Trigger Operation by pulse width)
- Asynchronous reset (External Trigger Operation by pulse width)

Camera Interface Briefs

Mode 1: Continuous

- $1360 \times 1040 \times 8\text{-bit}$ @ 15 fps.
- Analog monochrome video.
- Matrox Solios eA/XA receiving Sync and video signals from camera.
- DCF used: [VCCG20S20_1360x1040Con.DCF](#)



Mode 2: Pseudo-continuous

- $1360 \times 1040 \times 8\text{-bit}$.
- Analog monochrome video
- Matrox Solios eA/XA sending EXPOSURE1 (TRIGGER IN) signal to camera to initiate and control the exposure.
- Matrox Solios eA/XA receiving Sync and video signals from camera.
- DCF used: [VCCG20S20_1360x1040Pcon.DCF](#)

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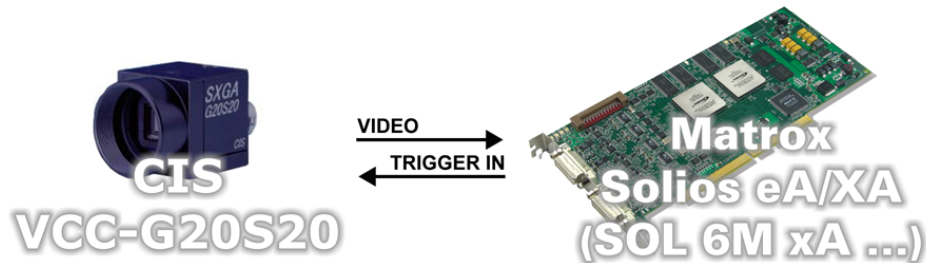
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Basics about the
interface modes

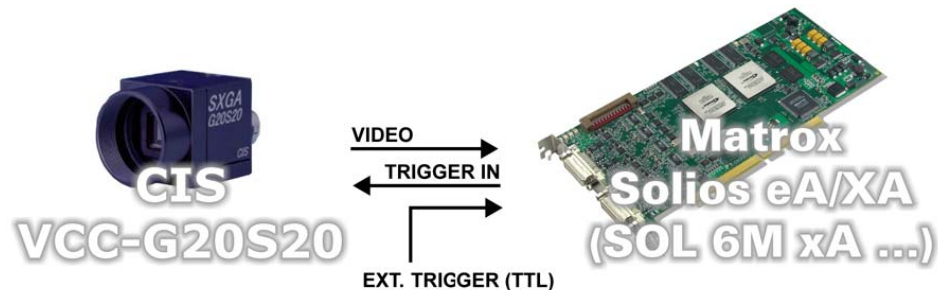
Camera Interface Briefs

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- 1360 × 1040 × 8-bit.
- Analog monochrome video
- Matrox Solios eA/XA receiving external trigger signal.
- Matrox Solios eA/XA sending EXPOSURE1 (TRIGGER IN) signal to camera to initiate and control the exposure.
- Matrox Solios eA/XA receiving Sync and video signals from camera.
- DCF used: [VCCG20S20_1360x1040Async.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 15 frames per second.
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual for more information.
- **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

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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 Timer1.
- **Exposure time:** The Timer 1 active duration initiates and controls the exposure time. To modify the exposure time, change the Timer 1 active duration 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

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 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)

Pin name	Pin no.
CH0_INPUTA	C1
GROUND	C5

CIS VCC-G20U20
(12-pin connector)

Pin name	Pin no.
VIDEO	04
VIDEO OUT GND	03



Cabling details for the
interface modes

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Cabling details for the
interface modes

Cabling Requirements (cont.)

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)			CIS VCC-G20U20 (12-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
GROUND	C5		VIDEO OUT GND	03
P0_TTL_AUX (EXP_OUT)	23	→	TRIGGER IN	11
GROUND	11		TRIGGER IN GND	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 Solios eA/XA (DVI analog input connector-0)			CIS VCC-G20U20 (12-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
GROUND	C5		VIDEO OUT GND	03
P0_TTL_AUX (EXP_OUT)	23	→	TRIG IN	11
GROUND	11		TRIG IN GND	12

- **External trigger:** External trigger should be connected to the OPTO TRIG input of the 9-pin connector (pins 7 and 2) 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	←	GND	--

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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