

Matrox Solios eA/XA

Camera Interface Application Note

CREVIS MV-BS20A

May 19, 2010

Basics about the
camera

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.
- 28.6363 MHz pixel clock rate.

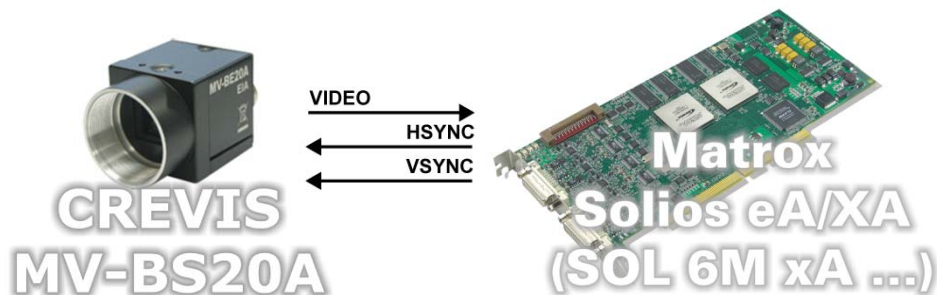
Interface Mode

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

Camera Interface Briefs

Mode 1: Continuous

- $1360 \times 1040 \times 8\text{-bit}$ @ 15 fps.
- Analog monochrome video.
- Matrox Solios eA/XA sending horizontal and vertical sync signals to camera.
- Matrox Solios eA/XA receiving video signals from camera.
- DCF used: [MV-BS20A_1360x1040Con.DCF](#)



Mode 2: Pseudo-continuous

- Up to $1360 \times 1040 \times 8\text{-bit}$.
- Analog monochrome video
- Matrox Solios eA/XA sending EXPOSURE (EXT. TRIGGER IN) signal to camera to initiate and control the exposure.
- Matrox Solios eA/XA sending horizontal and vertical sync signals to camera.
- Matrox Solios eA/XA receiving video signals from camera.
- DCF used: [MV-BS20A_1360x1040Pcon.DCF](#)

Continued...

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

Basics about the
interface modes

Matrox Solios eA/XA

Camera Interface Application Note

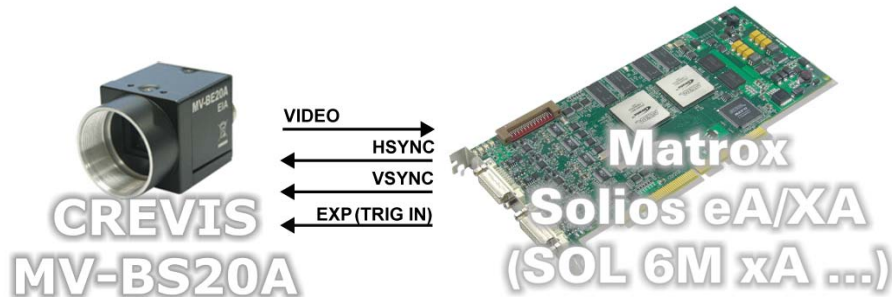
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Basics about the
interface modes

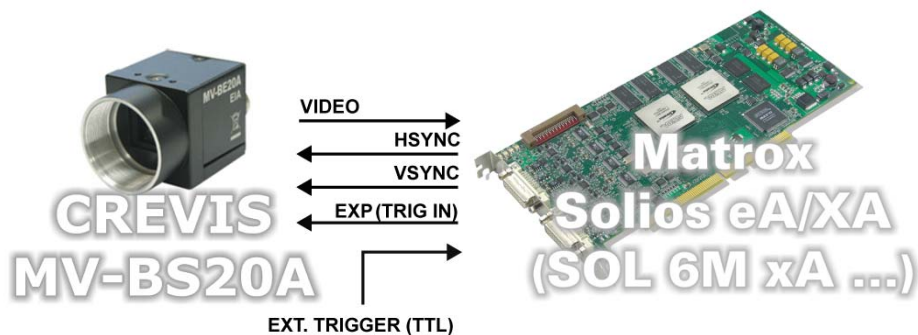
Camera Interface Briefs

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- Up to $1360 \times 1040 \times 8$ -bit.
- Analog monochrome video
- Matrox Solios eA/XA receiving external trigger signal.
- Matrox Solios eA/XA sending EXPOSURE (EXT. TRIGGER IN) signal to camera to initiate and control the exposure.
- Matrox Solios eA/XA sending horizontal and vertical sync signals to camera.
- Matrox Solios eA/XA receiving video signals from camera.
- DCF used: [MV-BS20A_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.

Matrox Solios eA/XA

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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	ON	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 EXPOSURE (EXT. TRIGGER IN) signal initiates and controls the exposure time. To modify the exposure time, change the TIMER1 active duration in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the camera 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	ON	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 EXPOSURE (EXT. TRIGGER IN) signal initiates and controls the exposure time. To modify the exposure time, change the TIMER1 active duration in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the camera manual for more information.
- **Camera settings:** Refer to *Mode 2: Pseudo-continuous*.

Matrox Solios eA/XA

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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)

Crevis MV-BS20A
(12-pin connector)

Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
GROUND	C5	—	GROUND	03
P0_LVDS/TTL_CHSYNC_IO+	13	→	HD IN	06
GROUND	11	—	GROUND	05
P0_LVDS/TTL_VSYNC_IO+_OUT	05	→	VD IN	07
GROUND	03	—	GROUND	08

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)

Crevis MV-BS20A
(12-pin connector)

Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
GROUND	C5	—	GROUND	03
P0_TTL_AUX (EXP_OUT)	23	→	EXT TRIG IN	11
GROUND	11	—	EXT TRIG IN GND	12
P0_LVDS/TTL_CHSYNC_IO+	13	→	HD IN	06
GROUND	11	—	GROUND	05
P0_LVDS/TTL_VSYNC_IO+_OUT	05	→	VD IN	07
GROUND	03	—	GROUND	08

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)

Crevis MV-BS20A
(12-pin connector)

Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
GROUND	C5	—	GROUND	03
P0_TTL_AUX (EXP_OUT)	23	→	EXT TRIG IN	11
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Cabling details for
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Cabling Requirements (cont.)

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)

Pin name

Pin no.

P0_LVDS/TTL_CHSYNC_IO+

05

GROUND

11

P0_LVDS/TTL_VSYNC_IO+_OUT

05

GROUND

03

Crevis MV-BS20A

(12-pin connector)

Pin name

Pin no.

HD IN

06

GROUND

05

VD IN

07

GROUND

08

- **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)

OPTO TRIG+

07

OPTO TRIG-

02

External Trigger Source

SIGNAL

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GROUND

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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, 2010-2011.

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SOL-CID-122

