Matrox Solios eA/XA
Camera Interface Application Note
TOSHIBA IK-TF5 August 2, 2006

Basics about the camera

Camera Descriptions

- Effective resolution: 648 × 494 @ 60 fps.
- Analog RGB video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 24.5459 MHz pixel clock rate.

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

Interface Mode

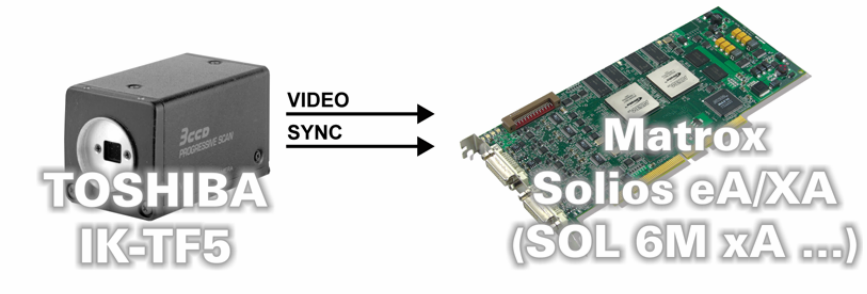
- Continuous
- Asynchronous reset (Trigger Sync – Reset PW SR)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 648 × 494 @ 60 fps or 648 × 234 @ 120 fps.
- Analog RGB video.
- Matrox Solios eA/XA receiving Sync and video signals from camera.
- DCF used: IKTF5_648x494Con.DCF (Partial Read Off – 60 fps)
- DCF used: IKTF5_648x234Con.DCF (Partial Read On – 120 fps)



Mode 2: Asynchronous reset

- Up to 646 × 494 × 8-bit.
- Analog RGB 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: IKTF5_648x494Async.DCF (Partial Read Off)
- DCF used: IKTF5_648x234Async.DCF (Partial Read On)

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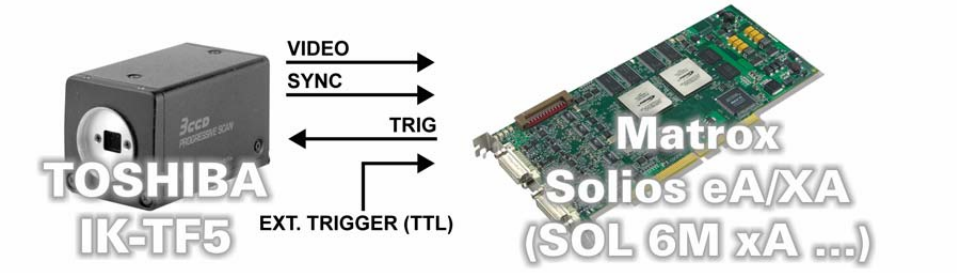
Mode 2: Asynchronous reset



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 60/120 frames per second (Partial Scanning Off/On respectively).
- **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.
- **Camera settings:** Use the on-screen display menu to set the following parameters:

Settings	...x494Con.DCF	...x234Con.DCF
MODE	Manual	Manual
MANU	OFF	OFF
PART	OFF	ON

Mode 2: 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 (rising edge to falling edge) of the EXPOSURE2 (TRIG) signal (plus a **6 µs** internal camera delay) is the exposure time, which can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. The minimum EXPOSURE1 period is **2 µs**. Consult the respective manual for more information.
- **Camera settings:** Use the on-screen display menu to set the following parameters:

Settings	...x494Con.DCF	...x234Con.DCF
MODE	E, TRIG	E, TRIG
→ E, TRIG	PW SR	PW SR
TRIG. P		
PART	OFF	ON

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Cabling details for the interface modes

Cabling Requirements

Mode 1: Continuous

- **Cable:** DVI-TO-8BNC/O (open ended) cable required for video and synchronization signals.
- **Connection:** Connections between the DB-15 connector (RGB terminal) of the camera and the DVI connector of the Matrox Solios eA/XA are as follows:

TOSHIBA IK-TF5 (15-pin connector)			**Matrox Solios eA/XA (DVI connector 0)**	
Pin name	**Pin no.**		**Pin name**	**Pin no.**
R (RED)	01	→	CH0_INPUTA	C1
GND	05	--	--	--
G (GREEN)*	02	→	CH1_INPUTA	C2
GND	06	--	--	--
B (BLUE)	03	→	CH2_INPUTA	C3
GND	07	--	--	--
TRIG	12**	←	CH0_EXPOSURE	23**

* SYNC on Green

** This connection is not necessary for this mode however allows the same cable to be used with both modes.

Mode 2: Asynchronous reset

- **Cable:** DVI-TO-8BNC/O (open ended) cable required for video, synchronization and control signals.
- **Connection:** Connections are as in Mode 1: Continuous including the following:

H/ TRIGGER SOURCE			**Matrox Solios eA/XA (DVI connector 0)**	
Pin name	**Pin no.**		**Pin name**	**Pin no.**
H/W TRIG Cable	--	→	CH0_TRIGTTL	14
GND	--		DIGITALGROUND	15

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