Matrox Genesis

Camera Interface Application Note

SONY XC-HR50 April 17, 2002

Basics about the camera

Camera Descriptions

- Effective resolution: 640 × 495 × 8-bit @ 60/120 fps.
- Single channel analog video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 24.54 MHz pixel clock rate.

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

Interface Modes

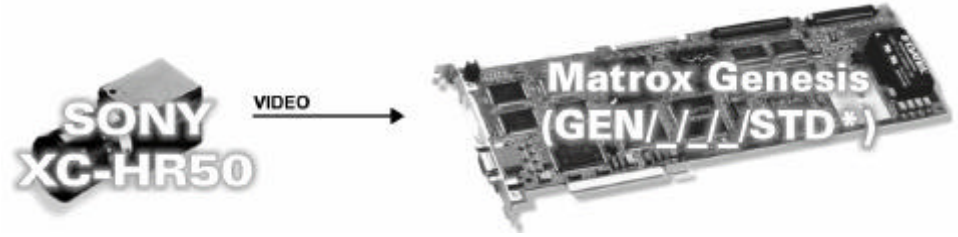
- Continuous (binning, non-binning)
- Asynchronous reset (External Trigger Shutter Mode 2)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 640 × 495/240 × 8-bit @ 60/120 fps.
- Single channel analog video.
- Progressive scan.
- Matrox Genesis receiving video signal (with sync) from camera.
- DCF used: GHR50C.DCF (Non-binning, 640 × 495 @ 60 FPS)
- DCF used: GHR50CB1.DCF (Binning, 640 × 240 @ 120 FPS)



Mode 2: Asynchronous Reset (Ext. Trigger Shutter Mode 2)

- 640 × 495/240 × 8-bit.
- Single channel analog video.
- Progressive scan.
- Matrox Genesis receiving external trigger signal.
- Matrox Genesis sending EXPOSURE1 (EXT. TRIGGER IN) signal to camera to initiate and control exposure time.
- Matrox Genesis receiving video signal from camera.
- DCF used: GHR50A.DCF (Non-binning, 640 × 495)
- DCF used: GHR50AB1.DCF (Binning, 640 × 240)

Continued…

Matrox Genesis

Camera Interface Application Note

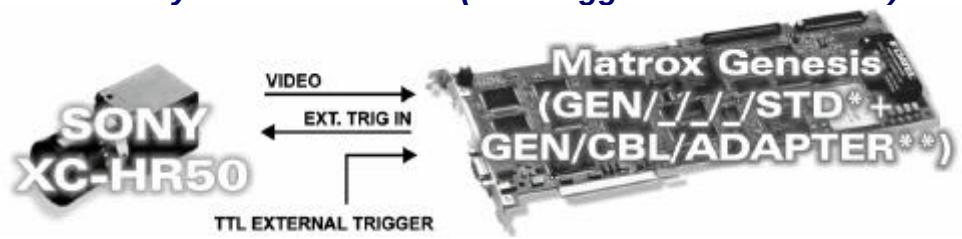
SONY XC-HR50 April 17, 2002

Basics about the interface modes

Specifics about the interface modes

Camera Interface Briefs (Continued)

Mode 2: Asynchronous Reset (Ext. Trigger Shutter Mode 2)



Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 60/120 frames per second (non-binning/binning respectively).
- **Exposure time:** Exposure time is determined by the shutter setting. Refer to the camera manual 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:

	EXT	INT
Internal/External Sync		•

	OFF	ON
Shutter Speed 1	•	
Shutter Speed 2	•	
Shutter Speed 3	•	
Shutter Speed 4	•	
HR 5	•	
Trigger 6	•	
Trigger 7	•	
Trigger 8	•	
Fix/M 9	•	
Binning 0	*	*

* Binning = ON/Non-Binning = OFF

Mode 2: Asynchronous Reset (Ext. Trigger Shutter Mode 2)

- **Frame rate**: The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The width (rising edge to falling edge) of the EXPOSURE1 (EXT. TRIGGER IN) signal equals the exposure time. The exposure time can be modified in the DCF using Matrox Matrox Intellicam, Genesis Native Library (GNL) imCamControl() or with the MIL MdigControl() function. Refer to the appropriate manual or user guide for more information.

Specifics about the interface modes

Camera Interface Details (continued)

Mode 2: Asynchronous Reset (Ext. Trigger Shutter Mode 2)

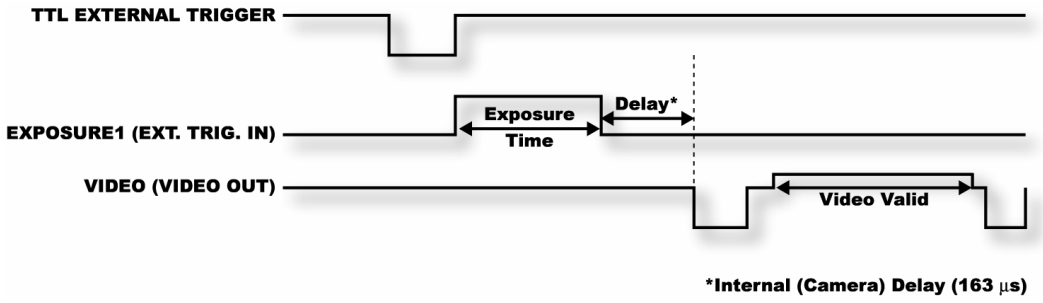
- **Camera Switch settings:** Internal/External synchronization switch and DIP switches are set as follows, refer to the camera manual for additional information:

	EXT	INT
Internal/External Sync		•

	OFF	ON
Shutter Speed 1	•	
Shutter Speed 2	•	
Shutter Speed 3	•	
Shutter Speed 4	•	
HR 5	•	
Trigger 6	•	
Trigger 7	•	
Trigger 8		•
Fix/M 9	•	
Binning 0	*	*

* Binning = ON/Non-Binning = OFF

- **Timing diagram**:



Cabling details for this interface mode

Cabling Requirements

Mode 1: Continuous

- **Cable:** IMG-7W2-TO-5BNC cable required for video.
- **Connection:** Connections between the 12-pin connector of the camera and the BNC connectors of the Matrox Genesis are as follows:

MATROX GENESIS (BNC connector) *Pin name*	*Pin no.*		SONY XC-HR50 (12-pin connector) *Pin name*	*Pin no.*
RED BNC	--	←	VIDEO OUT	04
RED BNC (GND)	--	--	GROUND	03

Matrox Genesis

Camera Interface Application Note

SONY XC-HR50 April 17, 2002

Cabling Requirements (continued)

Mode 2: Asynchronous Reset (Ext. Trigger Shutter Mode 2)

- **Cable:** IMG-7W2-TO-5BNC and DBHD68-TO-OPEN (open ended) cables required for video, synchronization and control signals.
- **External trigger:** TTL external trigger should be connected to the TTL trigger input of the IMG-7W2-TO-5BNC cable (gray BNC).
- **Connection:** Connections between the 12-pin connector of the camera and the 7/68-pin connectors of the Matrox Genesis are as follows:

MATROX GENESIS (BNC connector)			**SONY XC-HR50 (12-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
RED BNC	--	←	VIDEO OUT	04
RED BNC (GND)	--	--	GROUND	03
Cable Adapter Board (68-pin connector)			**SONY XC-HR50 (12-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
EXPOSURE2, OUTPUT, TTL	58	→	TRIG IN	11
GROUND	25	--	GROUND	03
Matrox Genesis (BNC connector)			**TTL External Trigger Source**	
Pin name	***Pin no.***			
GRAY BNC	--	←	SIGNAL	--

The DCF(s) mentioned in this application note can be found on the MIL, Native Library CD or our FTP site (ftp.matrox.com). 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.

Corporate headquarters:

Canada and U.S.A.

Matrox Electronic Systems Ltd.
1055 St. Regis Blvd.
Dorval, Quebec H9P 2T4
Canada
Tel: (514) 685-2630
Fax: (514) 822-6273