

Matrox Genesis

Camera Interface Application Note

SONY XC-HR70

April 23, 2002

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: $1024 \times 768 \times 8\text{-bit}$ @ 30 full/60 binned fps.
- Single channel analog video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 29.5 MHz pixel clock rate.

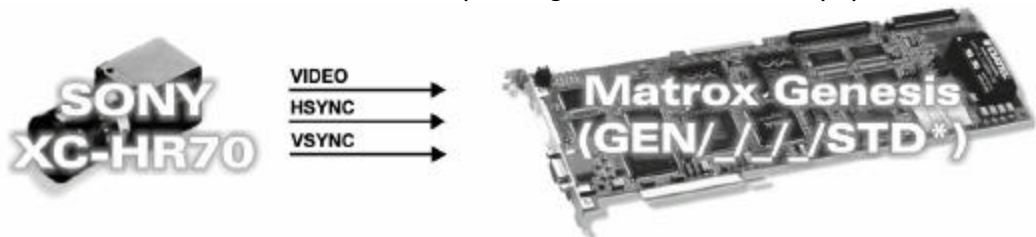
Interface Modes

- Continuous
- Asynchronous reset (External Trigger Shutter Mode 2)

Camera Interface Briefs

Mode 1: Continuous

- $1024 \times 768/354 \times 8\text{-bit}$ @ 30/60 fps.
- Single channel analog video.
- Progressive scan.
- Matrox Genesis receiving video signal (with sync) from camera.
- DCF used: [GHR70C.DCF](#) (Non-binning, 1024×768 @ 30 fps)
- DCF used: [GHR70CB1.DCF](#) (Binning, 1024×354 @ 60 fps)



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

- $1024 \times 768/354 \times 8\text{-bit}$.
- Single channel analog video.
- Progressive scan.
- Matrox Genesis receiving external trigger signal.
- Matrox Genesis sending EXPOSURE2 (EXT. TRIGGER IN) signal to camera to initiate and control exposure time.
- Matrox Genesis receiving video signal from camera.
- DCF used: [GHR70A.DCF](#) (Non-binning, 1024×768)
- DCF used: [GHR70AB1.DCF](#) (Binning, 1024×354)

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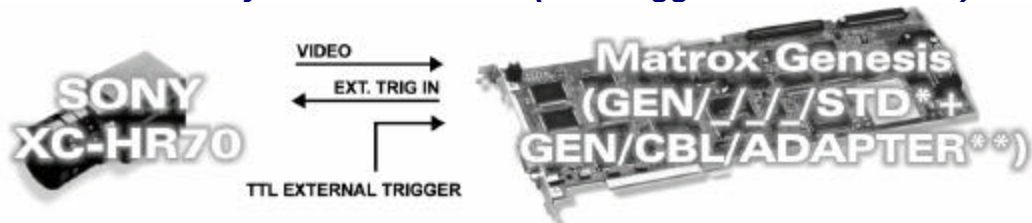
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Basics about the
interface modes

Camera Interface Briefs (Continued)

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



Specifics about the
interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 30/60 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 EXPOSURE2 (EXT. TRIGGER IN) signal equals the exposure time. The exposure time can be modified in the DCF using Matrox Intellicam, Genesis Native Library (GNL) imCamControl() or with the MIL MdigControl() function. Refer to the appropriate manual or user guide for more information.

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Specifics about the
interface modes

Camera Interface Details (continued)

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

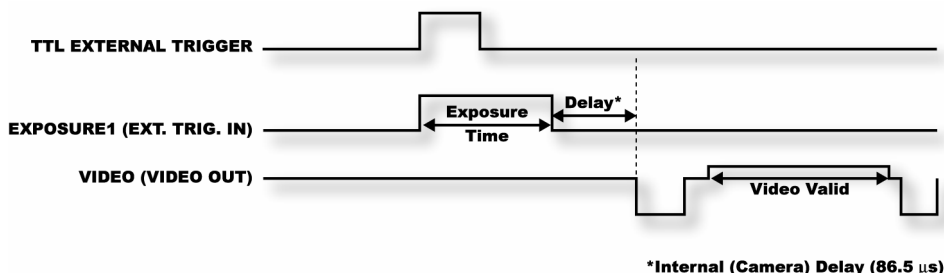
- **Camera Switch settings:** Internal/External synchronization switch and DIP switches are set as follows, refer to the camera manual for additional information:

	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-HR70 (12-pin connector) Pin name	Pin no.
RED BNC	--	←	VIDEO OUT	04
RED BNC (GND)	--	--	GROUND	03

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Cabling details for this
interface mode

Cabling Requirements (continued)

Mode 1: Continuous

- **Connection:** Connections between the 12-pin connector of the camera and the 68-pin connectors of the Matrox Genesis are as follows:

Cable Adapter Board (68-pin connector)			SONY XC-HR70 (12-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
HSYNC, INPUT, TTL	34	←	HSYNC	06
VSYNC, INPUT, TTL	33	←	VSYNC	07
GROUND	28	--	GND	05

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-HR70 (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-HR70 (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](ftp:ftp.matrox.com)). The information furnished by Matrox Electronic 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.

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