

Matrox Genesis

Camera Interface Application Note

JAI CV-M77

December 20, 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 × 768 @ 25 fps.
- RGB analog video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 25 MHz pixel clock rate.

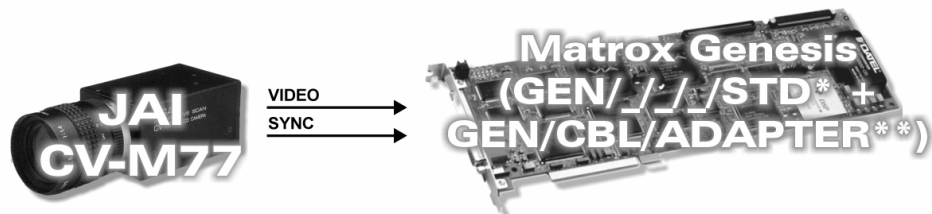
Interface Modes

- Continuous
- Asynchronous reset (Pulse Width Control Trigger Mode)

Camera Interface Briefs

Mode 1: Continuous

- 1024 × 768 @ 25 fps.
- RGB analog video.
- Progressive scan.
- Matrox Genesis receiving video signals from camera.
- DCF used: [GCVM77C.DCF](#)



Mode 2: Asynchronous Reset (Pulse Width Control Trigger Mode)

- 1024 × 768 @ 25 fps.
- RGB analog video.
- Progressive scan.
- Matrox Genesis receiving external trigger signal.
- Matrox Genesis sending EXPOSURE2 (EXT. TRIGGER INPUT) signal to camera to initiate and control exposure time.
- Matrox Genesis receiving SYNC (SYNC OUTPUT) and video signals from camera.

Continued...

*Matrox Genesis main board with grab module
**Matrox digital cable adapter board (suggested)

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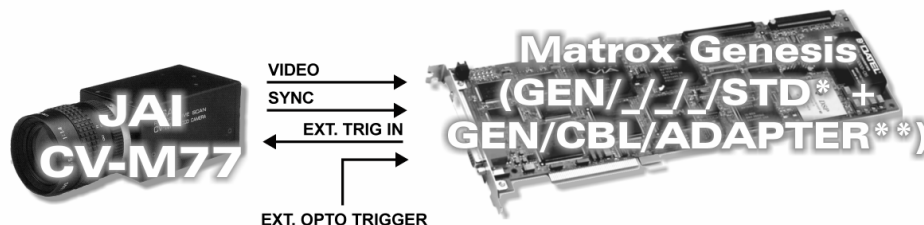
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Basics about the
interface modes

Camera Interface Briefs

Mode 2: Asynchronous Reset (Pulse Width Control Trigger Mode)

- DCF used: [GCVM77A.DCF](#)



*Matrox Genesis main board with grab module

**Matrox digital cable adapter board (required)

Specifics about the
interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 25 frames per second.
- **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 switch settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

SW-1 Switch (camera rear)	Setting
1 - Shutter	As desired
2 - Shutter	As desired
3 - Shutter	As desired
4 - Shutter	As desired
5 - Ext. Trigger	OFF
6 - Ext. Trigger	OFF
7 - Frame Delay	OFF
8 - Gamma	N/A
9 - Gain	N/A
10 - Control	N/A

Mode 2: Asynchronous Reset (Pulse Width Control Trigger Mode)

- **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 frame readout period.
- **Exposure time:** The width (falling edge to rising edge) of the EXPOSURE2 (EXT. TRIGGER INPUT) signal is the exposure time. The default exposure time is equal to **1 ms**. The exposure time can be modified in the DCF using Matrox Intellicam, Genesis Native Library (GNL) imCamControl() or with the MIL MdigControl() function. Consult the respective manual for more information.

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Specifics about the
interface modes

Camera Interface Details (continued)

Mode 2: Asynchronous Reset (Pulse Width Control Trigger Mode)

- **Camera switch settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

SW-1 Switch (camera rear)	Setting
1 - Shutter	N/A
2 - Shutter	N/A
3 - Shutter	N/A
4 - Shutter	N/A
5 - Ext. Trigger	ON
6 - Ext. Trigger	ON
7 - Frame Delay	N/A
8 - Gamma	N/A
9 - Gain	N/A
10 - Control	N/A

Cabling Requirements

Mode 1: Continuous

- **Cable:** IMG-7W2-TO-5BNC cable required for video, synchronization and control signals
- **Connection:** Connections between the 9-pin connector of the camera and the video input connector of the Matrox Genesis are as follows:

JAI CV-M77 (9-pin connector)		MATROX GENESIS (7-pin connector)	
Pin name	Pin no.	Pin name	Pin no.
R OUTPUT	03	→	Analog Video Input 1 (RED) A1
G OUTPUT	04	→	Analog Video Input 2 (GREEN) A2
B OUTPUT	05	→	Analog Video Input 3 (BLUE) 05
SYNC OUTPUT	07	→	Analog Video Input 4 (ALPHA) 04

Mode 2: Asynchronous Reset (Pulse Width Control Trigger Mode)

- **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).

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Cabling details for the
interface modes

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Cabling details for the
interface modes

Cabling Requirements (continued)

Mode 2: Asynchronous Reset (Pulse Width Control Trigger Mode)

- **Connection:** Connections between the 9-pin connector of the camera and the video input connector of the Matrox Genesis are as follows:

JAI CV-M77 (12-pin DC-IN/SYNC. connector)			MATROX GENESIS (7-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
R OUTPUT	03	→	Analog Video Input 1 (RED)	A1
G OUTPUT	04	→	Analog Video Input 2 (GREEN)	A2
B OUTPUT	05	→	Analog Video Input 3 (BLUE)	05
SYNC OUTPUT	07	→	Analog Video Input 4 (ALPHA)	04

- **Connection:** Connections between the 12-pin connectors (DC-IN/SYNC.) of the camera and the 68-pin connector of the digital cable adapter board are as follows:

JAI CV-M77 (12-pin DC-IN/SYNC. connector)			MATROX GENESIS (68-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
EXT. TRIGGER	11	←	EXPOSURE2, OUTPUT, TTL	58

- **Connection:** Connections between the H/W trigger source and the video input connector of the Matrox Genesis are as follows:

H/W Trigger Source			MATROX GENESIS (7-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
H/W TRIG Cable	--	→	TTL TRIGGER INPUT +	01
GND	--	→	TTL TRIGGER INPUT -	03

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

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