MATROX GENESIS
CAMERA INTERFACE APPLICATION NOTE
JAI CV-M1 MARCH 21, 2001

Basics about the camera

Camera Descriptions

- 1300 × 1030 × 8-bit @ 12 fps.
- Single channel analog video output.
- Progressive scan.
- External sync.
- Internal exposure control.
- 20.2 MHz pixel clock rate.

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

Interface Modes

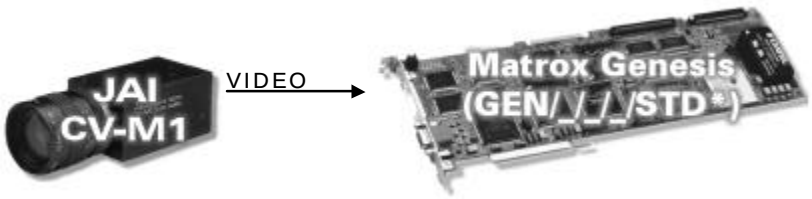
- Continuous
- Asynchronous reset

Basics about the interface modes

Camera Interface Briefs

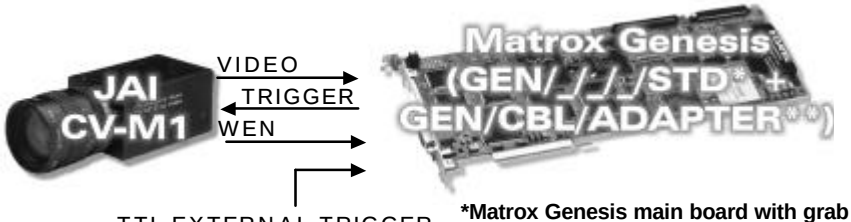
Mode 1: Continuous

- 1300 × 1030 × 8-bit @ 12 fps (normal speed readout).
- 1300 × 509 × 8-bit @ 24 fps (double speed readout).
- Single analog video.
- Progressive scan.
- Matrox Genesis receiving video signals from camera.
- DCF used: CVM1CONT.DCF (normal speed readout)
- DCF used: CVM1CFR.DCF (double speed readout).



Mode 2: Asynchronous Reset

- 1300 × 1025 × 8-bit.
- Single analog video.
- Progressive scan.
- Matrox Genesis receiving TTL external trigger signal.
- Matrox Genesis sending EXPOSURE1 (TRIGGER INPUT) signal to camera to initiate and control exposure time.
- Matrox Genesis receiving video signals from camera.
- DCF used: CVM1TS.DCF



***Matrox Genesis main board with grab module**
**** Matrox digital cable adapter board**

Specifics about the interface modes

Camera Interface Details

Modes 1: Continuous

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 12 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:

OFF	ON		
•		1	Shutter speed
•		2	Shutter speed
•		3	Shutter speed
•		4	Shutter speed
*	*	5	Readout mode
•		6	Ext. trigger mode
•		7	Ext. trigger mode
•		8	Interface

* Switch 5 setting depends on the readout mode used (normal or double speed), refer to camera manual for details.

Modes 2: Asynchronous Reset

- **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 (TRIGGER INPUT) signal is 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. Consult the respective manual for more information.
- **Camera switch settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

OFF	ON		
•		1	Shutter speed
•		2	Shutter speed
•		3	Shutter speed
•		4	Shutter speed
•		5	Readout mode
•		6	Ext. trigger mode
	•	7	Ext. trigger mode
•		8	Interface

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Cabling details for the interface modes

Cabling Requirements

Mode 1: Continuous

- **Cable:** IMG-7W2-TO-5BNC cable required for video signals.
- **Connection:** Connection between the VIDEO OUT BNC connector of the camera and the 7-pin (VIDEO INPUT) connector of the Matrox Genesis is as follows:

GEN/_/_/_/STD (7-pin connector)		**JAI CV-M1 (BNC connector)**	
Pin name	***Pin no.***	***Pin name***	***Pin no.***
RED BNC	--	VIDEO OUT	--

Mode 2: Asynchronous Reset

- **Cable:** DBHD68-TO-OPEN (open ended) and IMG-7W2-TO-5BNC cables required for video, synchronization, external trigger and control signals.
- **Connections:** Connection between the VIDEO OUT BNC connector of the camera and the 44-pin connector of the Matrox Genesis is as in *Mode 1: Continuous*. Connection between the 6-pin RS-232C/TRIGGER connector of the camera and the 68-pin connector of the Matrox Genesis are as follows:

DIGITAL CABLE ADAPTER BOARD (68-pin connector)			**JAI CV-M1 (6-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
EXPOSURE1, OUTPUT, TTL	24	→	TRIGGER INPUT	05
TRIGGER, INPUT, TTL	67	←	WEN OUTPUT	06

The DCF(s) mentioned in this application note can be found on the MIL and 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.

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