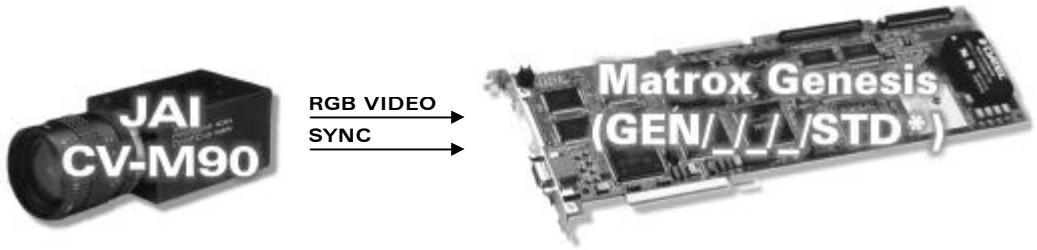
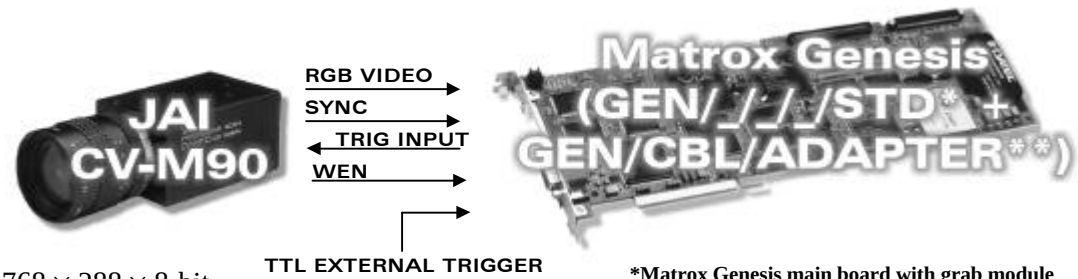
Application Note:
Interfacing non-standard cameras to Matrox Genesis

MATROX GENESIS

JAI CV-M90

September 25, 2000

Camera Descriptions	• 752 × 582 × 8-bit @ 25 fps (PAL version). • RGB analog video output. • Interlace or progressive scan. • External sync. • Internal exposure control. • Pixel clock: 14.75 MHz
Interface mode	• Continuous, asynchronous reset
Camera Interface Briefs	**Mode 1: Continuous**  ***Matrox Genesis Main Board with Grab Module** • 768 × 575 × 8-bit @ 25 fps. • RGB analog video output • Interlace scan. • Continuous video. • Matrox Genesis receiving SYNC and video signals from camera. • DCF used: GCVM90C.DCF **Mode 2: Asynchronous Reset (Random Trigger Mode 1)**  ***Matrox Genesis main board with grab module** ****Matrox digital cable adapter board** • 768 × 288 × 8-bit. • RGB analog video output • Progressive scan. • Matrox Genesis receiving TTL external trigger. • Matrox Genesis sending EXPOSURE1 (TRIGGER INPUT) signal to camera. • Matrox Genesis receiving TRIGGER (WEN), SYNC and video signals from camera. • DCF used: GCVM90A.DCF

Camera Interface Details

Modes 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 or determined by the shutter setting (SW1 switch). Refer to the camera manual for more information.
- **Camera Switch Settings:** External switch (SW1 on rear panel) should be set as follows:

OFF	ON		
●		1	Shutter data 2SB*
●		2	Shutter data 1SB*
●		3	Shutter data LSB*
●		4	Electronic shutter
●		5	Scanning system
●		6	Gamma correction
●		7	Master gain
●		8	N/C

*NOTE switches 1 – 3 can be set to desired shutter speed selection.

Mode 2: Asynchronous Reset (Random Trigger Mode 1)

- Once it has received the external trigger signal, Matrox Genesis sends the EXPOSURE1 (TRIGGER INPUT) signal to the camera to initiate exposure.
- **Frame rate**: The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The falling edge of EXPOSURE1 (TRIGGER INPUT) signal initiates the exposure time for a period determined by the shutter speed setting (SW1 switch). In order to change the deployment time of the EXPOSURE1 (TRIGGER INPUT) use the Exposure Settings menu tab in Matrox Intellicam. Consult the Matrox Intellicam User Guide for more information.
- **Camera Switch Settings:** External switch (SW1 on rear panel) should be set as follows:

OFF	ON		
●		1	Shutter data 2SB*
●		2	Shutter data 1SB*
●		3	Shutter data LSB*
	●	4	Electronic shutter
●		5	Scanning system
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Cabling Requirements

Mode 1: Continuous

- IMG-7W2-TO-5BNC cable required for video and synchronization signals from camera.
- Connections between the Matrox Genesis and the 9-pin connector (**D.SUB**) of the camera are as follows:

GEN/_/_/_/STD (IMG-7W2-TO-5BNC)		**JAI CV-M90 (9-pin connector)**	
Pin name	**Pin no.**	**Pin name**	**Pin no.**
BNC RED WIRE	Signal	RED OUTPUT	03
GROUND	GND	GND	08
BNC GREEN WIRE	Signal	GREEN OUTPUT	04
GROUND	GND	GND	08
BNC BLUE WIRE	Signal	BLUE OUTPUT	05
GROUND	GND	GND	08
BNC BLACK WIRE	Signal	INT SYNC OUTPUT	07
GROUND	GND	GND	08

Mode 2: Asynchronous Reset (Random Trigger Mode 1)

- IMG-7W2-TO-5BNC and DBHD68-TO-OPEN cables required for video output of camera, and sync and control output.
- All connections between the Matrox Genesis and the 9-pin connector (**D.SUB**) of the camera as in Mode 1: *Continuous*.
- Connections between the 6-pin multi connector (**TRIGGER**) of the camera and the 68-pin connector of the Matrox Genesis are as follows:

GEN/CBL/ADAPTER (68-pin Connector)		**JAI CV-M90 (6-pin connector)**	
Pin name	**Pin no.**	**Pin name**	**Pin no.**
EXPOSURE1, OUTPUT, TTL	24	TRIGGER INPUT	05
GROUND	25	GND	03
TRIGGER, INPUT, TTL	67	WEN OUTPUT	06
GROUND	68	GND	03

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.

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

MATROX IMAGING