# Matrox Genesis
## Camera Interface Application Note
### JAI CV-A1                                                    March 3, 2003

*Basics about the camera*

## Camera Descriptions

- Effective resolution: $1376 \times 1035$ @ 16 fps.
- Analog video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 28.63636 MHz pixel clock rate.

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

## Interface Modes

- Continuous
- Asynchronous reset (Pulse Width Control Mode)

*Basics about the interface modes*

## Camera Interface Briefs

### Mode 1: Continuous

- $1376 \times 1035$ @ 16 fps.
- Analog video.
- Progressive scan.
- Matrox Genesis receiving video signal from camera.
- DCF used: GCVA1C.DCF
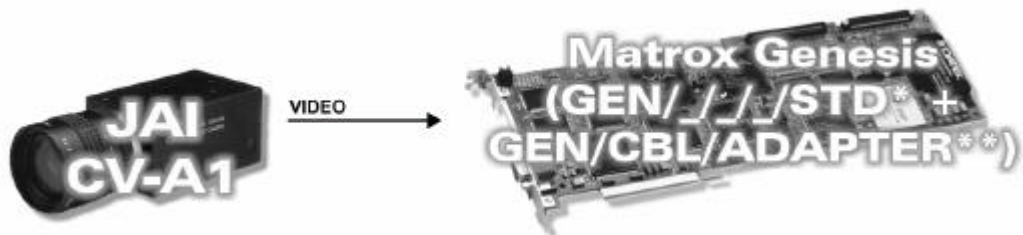


### Mode 2: Asynchronous Reset (Pulse Width Control Mode)

- $1376 \times 1035$.
- 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 video signal from camera.

Continued…

\* Matrox Genesis main board with grab module
\*\* Matrox digital cable adapter board (not required)

# Matrox Genesis
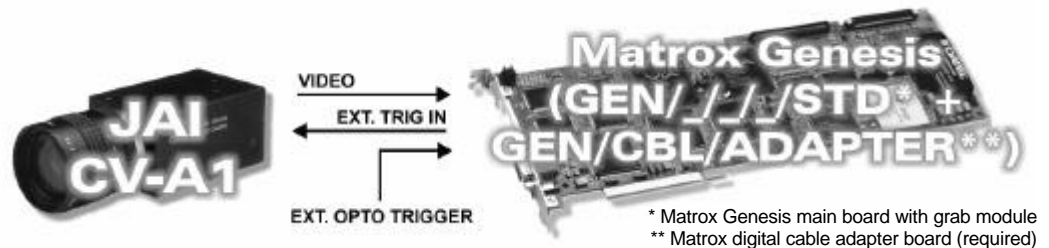## Camera Interface Application Note
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*Basics about the interface modes*

## Camera Interface Briefs
### Mode 2: Asynchronous Reset (Pulse Width Control Mode)
▪ DCF used: GCVA1A.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 16 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 configuration:** Camera configuration is performed via JAI´s camera control tool. Refer to the camera manual for additional information. Settings for this mode are as follows:

| Mode | Setting |
|---|---|
| Shutter | Normal |
| Trigger | Normal |
| Sync signal output | ON |

### Mode 2: Asynchronous Reset (Pulse Width Control 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 exposure time can be modified in the DCF using Matrox Intellicam, Genesis Native Library (GNL) imCamControl() or the MIL MdigControl() function. Consult the respective manual for more information.

*Specifics about the interface modes*

## Camera Interface Details (continued)

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

- **Camera configuration:** Camera configuration is performed via JAI´s camera control tool. Refer to the camera manual for additional information. Settings for this mode are as follows:

| Mode | Setting |
|---|---|
| Shutter | Normal |
| Trigger | Pulse width control |
| Sync signal output | ON |

*Cabling details for the interface modes*

## Cabling Requirements

### Mode 1: Continuous

- **Cable:** IMG-7W2-TO-5BNC cable required for video, synchronization and control signals
- **Connection:** Connections between the 12-pin connector (DC-IN/VIDEO OUT, EXT.HD/VD IN) of the camera and the Matrox Genesis are as follows:

| JAI CV-A1 (12-pin connector) Pin name | Pin no. | | Matrox Genesis (7-pin connector) Pin name | Pin no. |
|---|---|---|---|---|
| VIDEO OUTPUT | 04 | → | Analog Video Input 1 (RED) | A1 |

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

- **Cable: Cable:** IMG-7W2-TO-5BNC cable required for video, synchronization and control signals.
- **Connection:** Connections between the 12-pin connector (DC-IN/VIDEO OUT, EXT.HD/VD IN) of the camera and the Matrox Genesis are as follows:

| JAI CV-A1 (12-pin connector) Pin name | Pin no. | | MATROX GENESIS (7-pin connector) Pin name | Pin no. |
|---|---|---|---|---|
| VIDEO OUTPUT | 04 | → | Analog Video Input 1 (RED) | A1 |
| EXT. TRIGGER | 11 | ← | EXPOSURE2, OUTPUT, TTL | 58 |

*Cabling details for the interface modes*

## Cabling Requirements (continued)

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

▪ **Connection:** Connections between the H/W trigger source and 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 | -- | → | OPTOTRIG + | 35 |
| GND | -- | → | OPTOTRIG - | 34 |

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