

MATROX GENESIS

CAMERA INTERFACE APPLICATION NOTE

JAI CV-A11

OCTOBER 29, 2001

Basics about the
camera

Camera Descriptions

- 648 × 492 @ 30 fps.
- Single channel analog video output.
- Progressive scan.
- Full or partial scan.
- Internal or external sync.
- Internal or external exposure control.
- 12.27 MHz pixel clock rate.

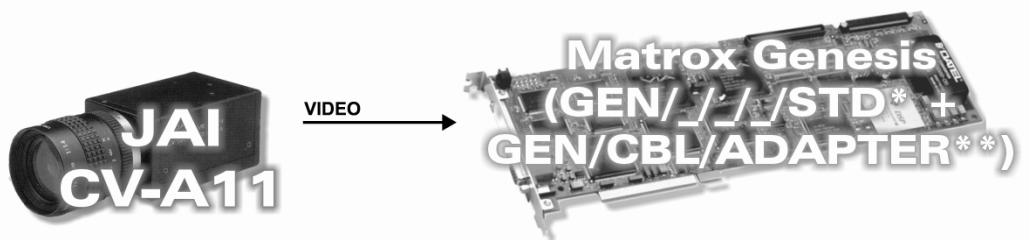
Interface Modes

- Continuous
- Asynchronous reset (pulse width control trigger mode)

Camera Interface Briefs

Mode 1: Continuous – full/partial scan

- 648 × up to 492.
- Single channel analog video.
- Progressive scan.
- Matrox Genesis receiving video signal (composite sync) from camera.
- DCF used: [GCVA11C1.DCF](#) (full - 648 × 492 @ 30 fps)
- DCF used: [GCVA11C2.DCF](#) (1/2 partial - 648 × 240 @ 56 fps)
- DCF used: [GCVA11C3.DCF](#) (1/3 partial - 648 × 160 @ 80 fps)
- DCF used: [GCVA11C6.DCF](#) (1/6 partial - 648 × 80 @ 134 fps)



Mode 2: Asynchronous Reset (pulse width control trig. mode)

- 648 × up to 492.
- Single channel analog video.
- Progressive scan.
- Matrox Genesis receiving external trigger signal.
- Matrox Genesis sending EXPOSURE1 (EXT. TRIG IN) signal to camera to initiate and control exposure time.
- Matrox Genesis receiving video signal (composite sync) from camera.

Continued...

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

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

Basics about the
interface modes

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JAI CV-A11

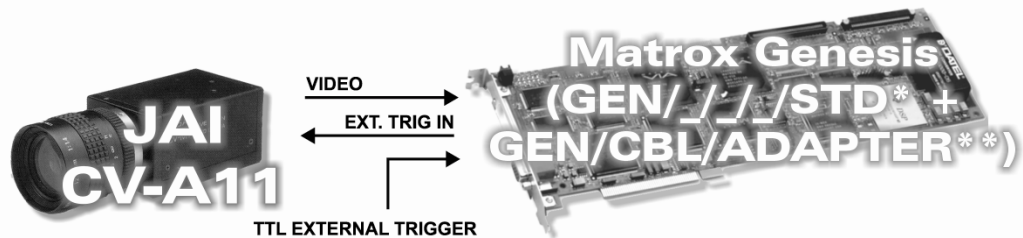
OCTOBER 29, 2001

Basics about the
interface modes

Camera Interface Briefs (Continued)

Mode 2: Asynchronous Reset (pulse width control trig. mode)

- DCF used: [GCVA11A1.DCF](#) (full - 648×492)
- DCF used: [GCVA11A2.DCF](#) (1/2 partial - 648×240)
- DCF used: [GCVA11A3.DCF](#) (1/3 partial - 648×160)
- DCF used: [GCVA11A6.DCF](#) (1/6 partial - 648×80)



Specifics about the
interface modes

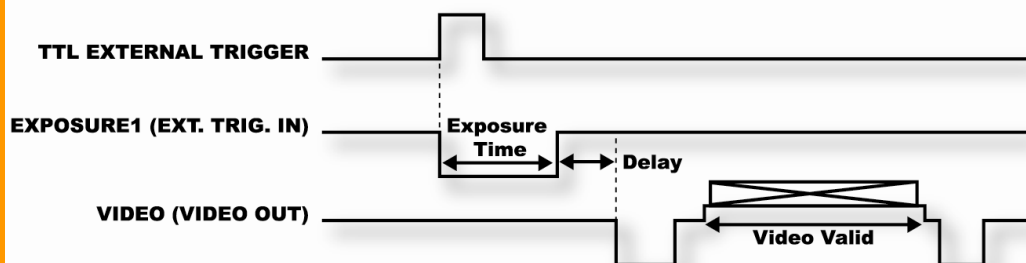
Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 30 fps (full scan) or up to 134 frames per second (partial scan).
- **Exposure time:** Exposure time is determined by shutter setting on camera. Refer to the camera manual for more information.

Mode 2: Asynchronous Reset (pulse width control trig. mode)

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal and the period of the exposure time.
- **Exposure time:** The width (falling edge to rising edge) of the EXPOSURE1 (EXT. TRIG IN) signal plus a fixed internal camera delay of 320 ms equals the exposure time. The exposure time can be modified in the DCF using Matrox Intellicam or with the MIL digitizer control function **MdigControl()**. Refer to the appropriate manual or user guide for more information.
- **Timing diagram:**



*Matrox Genesis main board with grab module

**Matrox digital cable adapter board

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JAI CV-A11

OCTOBER 29, 2001

*Cabling details for this
interface mode*

Cabling Requirements

Mode 1: Continuous

- **Cable:** IMG-7W2-TO-5BNC cable required for video, synchronization and control signals. BNC-TO-6/12-pin junction box (e.g. JU-F1) required for synchronization and exposure signals.
- **Connection:** Connections between the 12-pin connector (via BNC-TO-6/12-pin junction box) of the camera and the 7-pin connector of the Matrox Genesis are as follows:

Matrox Genesis (BNC connector)		JAI CV-A11 (12-pin connector)	
Pin name	Pin no.	Pin name	Pin no.
RED BNC	A1	← VIDEO1 OUTPUT	04
RED BNC (GND)	2	-- GROUND	03

- **Power supply:** connections are as follows:

POWER SUPPLY		JAI CV-A11 (12-pin connector)	
Pin name	Pin no.	Pin name	Pin no.
DC OUT (+12 V)	--	-- + 12 V	02
GROUND	--	-- GROUND	01

Mode 2: Asynchronous Reset (pulse width control trig. mode)

- **Cable:** IMG-7W2-TO-5BNC and DBHD68-TO-OPEN (open ended) cables required for video, synchronization and control signals. BNC-TO-6/12-pin junction box (e.g. JU-F1) required for synchronization and exposure signals.
- **External trigger:** External trigger source connects to the TTL Trigger Input (Gray BNC or pins 1 and 3 on Video Input connector).
- **Connection:** Connections between the 12-pin connector (via BNC-TO-6/12-pin junction box) of the camera and the 7-pin/68-pin connectors of the Matrox Genesis are as follows:

MATROX GENESIS (BNC connector)		JAI CV-A11 (12-pin connector)	
Pin name	Pin no.	Pin name	Pin no.
RED BNC	A1	← VIDEO1 OUTPUT	04
RED BNC (GND)	2	-- GROUND	03

CABLE ADAPTER BOARD (68-pin connector)		JAI CV-A11 (12-pin connector)	
Pin name	Pin no.	Pin name	Pin no.
EXPOSURE2, OUTPUT, TTL	58	← TRIG IN	11
GROUND	25	-- GROUND	12

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MATROX GENESIS

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JAI CV-A11

OCTOBER 29, 2001

Cabling details for this
interface mode

Cabling Requirements (cont.)

Mode 2: Asynchronous Reset (pulse width control trig. mode)

MATROX GENESIS
(BNC connector)

Pin name

Pin no.

TTL EXTERNAL TRIGGER
SOURCE

Pin name

Pin no.

GRAY BNC

1



SIGNAL

--

GRAY BNC GROUND

3

SIGNAL GND

--

- **Power supply:** connections are as Mode 1: *Continuous*.

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](ftp://ftp.matrox.com)). The information furnished by Matrox Electronics System, Ltd. is believed to be accurate and reliable. Please verify our FTP site ([ftp.matrox.com](ftp://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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