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.
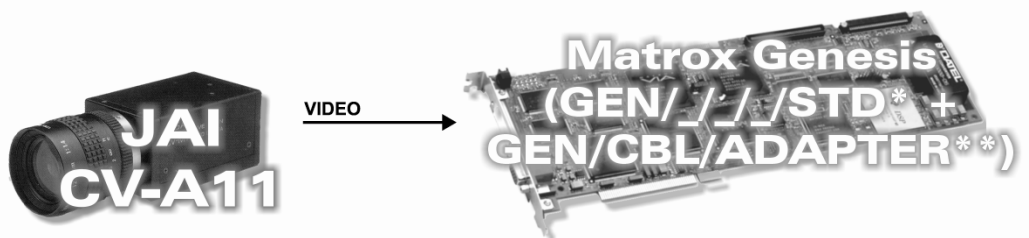- Internal or external exposure control.
- 12.27 MHz pixel clock rate.

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

Interface Modes

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

Basics about the interface modes

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

MATROX GENESIS
CAMERA INTERFACE APPLICATION NOTE
JAI CV-A11   OCTOBER 29, 2001
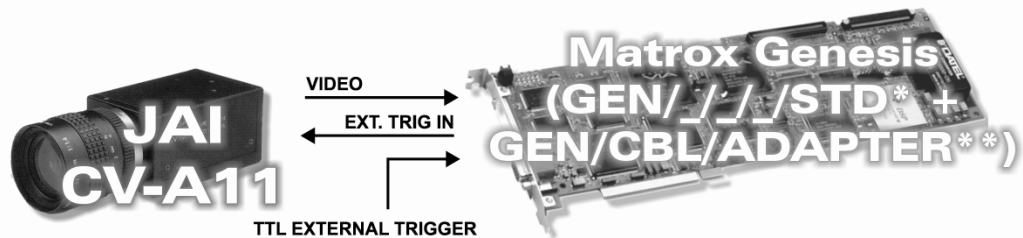
Camera Interface Briefs (Continued)

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)

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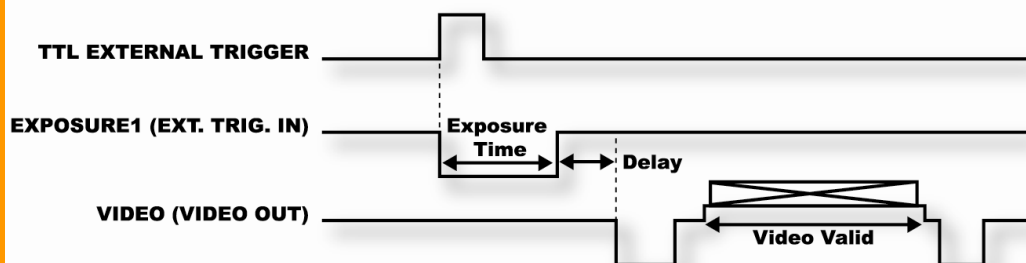
*Matrox Genesis main board with grab module
**Matrox digital cable adapter board

MATROX GENESIS
CAMERA INTERFACE APPLICATION NOTE
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

Continued…

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*.

MATROX
IMAGING

GEN-CID-111