MATROX GENESIS
CAMERA INTERFACE APPLICATION NOTE
PULNiX TMC-1000 OCTOBER 23, 2001

Basics about the camera

Camera Descriptions

- 1006 × 1016 × 24-bit @ up to 15 fps.
- RGB analog or LVDS digital video output.
- Progressive scan.
- Internal or external sync. (camera master).
- Internal or external exposure control.
- 20.034 MHz pixel clock rate.

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

Interface Modes

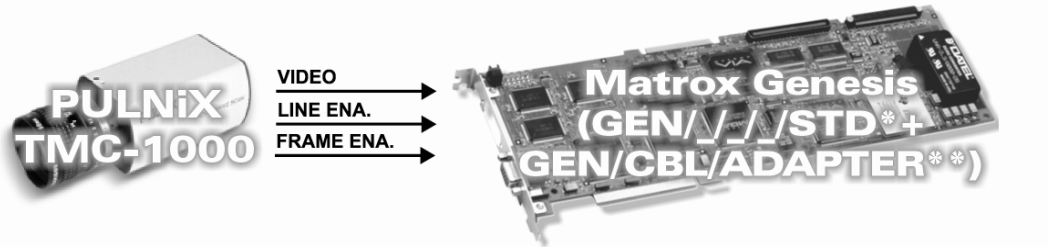
- Continuous
- Asynchronous reset (Pulse Width Control mode)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- 1006 × 1016 × 24-bit @ up to 15 fps.
- RGB analog video.
- Progressive scan.
- Matrox Genesis receiving HSYNC (HD SYNC), VSYNC (VD SYNC) and video signals from camera.
- DCF used: GTMC100C.DCF



Mode 2: Asynchronous Reset (Pulse Width Control mode)

- 1006 × 1016 × 24-bit.
- RGB analog video.
- Progressive Scan.
- Matrox Genesis receiving external trigger signal.
- Matrox Genesis sending EXPOSURE2 (VINIT) signal to camera to initiate and control exposure time.
- Matrox Genesis receiving HSYNC (HD SYNC), VSYNC (VD SYNC) and video signals from camera.

Continued…

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

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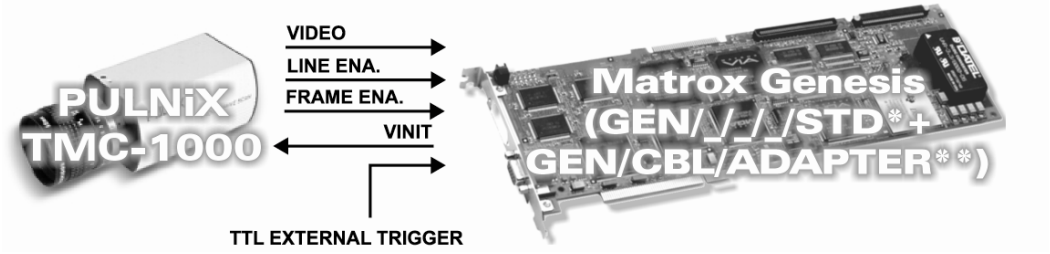
Basics about the interface modes

Camera Interface Briefs

- DCF used: GTMC100A.DCF



Specifics about the interface modes

Camera Interface Details

Modes 1: Continuous

- **Frame Rate:** Matrox Genesis receives the continuous video (and separate digital HSYNC and VSYNC) from the camera at 15 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:

Switch	*Setting*
Shutter Dial	0
Shutter switch	MAN

Modes 2: Asynchronous Reset

- **Frame rate**: The frame rate is determined by the frequency of the external trigger signal, with a maximum possible rate of up to 15 fps.
- **Exposure time:** The low level pulse period of the EXPOSURE2 (VINIT) signal is the exposure time. The default exposure time is equal to **13 ms**. The exposure time can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Minimum exposure width:** minimum EXPOSURE2 (TRIGGER) pulse width is equal to **508 µs**.
- **Camera switch settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

Switch	*Setting*
Shutter Dial	9
Shutter switch	ASY

Continued…

***Matrox Genesis main board with grab module**
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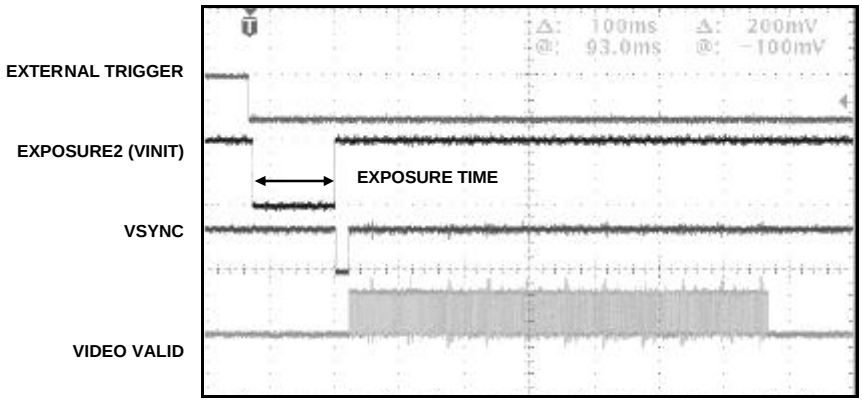
Specifics about the interface modes

Camera Interface Details (continued)

- **Timing Diagram:**



Cabling details for the interface modes

Cabling Requirements

Mode 1: Continuous

- **Cable:** IMG-7W2-TO-5NC and DBH68-TO-OPEN (open ended) cables required for video, synchronization and control signals.
- **Connection:** Connections between the 12-pin connector (**POWER**) of the camera and the 7-pin connector of the Matrox Genesis are as follows:

MATROX GENESIS (7-pin connector) Pin name	Pin no.		PULNiX TMC-1000 (12-pin connector) Pin name	Pin no.
RED BNC WIRE	SIGNAL	←	RED	01
RED BNC WIRE	GND		RED GND	06
GREEN BNC WIRE	SIGNAL	←	GREEN	02
GREENBNC WIRE	GND		GREEN GND	07
BLUE BNC WIRE	SIGNAL	←	BLUE	03
BLUE BNC WIRE	GND		BLUE GND	08

- **Connection:** Connections between the 15-pin connector (**SVGA OUTPUT**) of the camera and the 68-pin connector of the Matrox Genesis are as follows:

GEN/CBL/ADAPTER (68-pin connector) Pin name	Pin no.		PULNiX TMC-1000 (15-pin connector) Pin name	Pin no.
HSYNC, INPUT, TTL	34	←	H SYNC	13
GROUND	68		GND	11
V SYNC, INPUT, TTL	33	←	V SYNC	14
GROUND	66		GND	10

Cabling details for the interface modes

Cabling Requirements (Continued)

Mode 2: Asynchronous Reset

- **Cable:** IMG-7W2-TO-5NC and DBH68-TO-OPEN (open ended) cables required for video, synchronization and control signals.
- **External trigger:** TTL external trigger source should be connected to the TTL external trigger input of the IMG-7W2-TO-5BNC cable (Gray BNC wire).
- **Connection:** Connections between the 15-pin connector (**SVGA OUTPUT**) of the camera and the 7-pin/68-pin connectors of the Matrox Genesis are as in Mode 1: *Continuous*.

Connections between the 12-pin connector (**POWER**) of the camera and the 68-pin connector of the Matrox Genesis are as follows:

Cable Adapter Board (68-pin connector)			**PULNiX TMC-1000 (12-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
EXPOSURE2, OUTPUT, TTL	58	→	VINIT	06
GROUND	25	--	GND	01, 03, or 05
+12 V	--	--	+12V DC IN	02

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