

MATROX GENESIS

CAMERA INTERFACE APPLICATION NOTE

PULNiX TMC-1000

OCTOBER 23, 2001

*Basics about the
camera*

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

*Basics about the
interface modes*

Camera Descriptions

- $1006 \times 1016 \times 24$ -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.

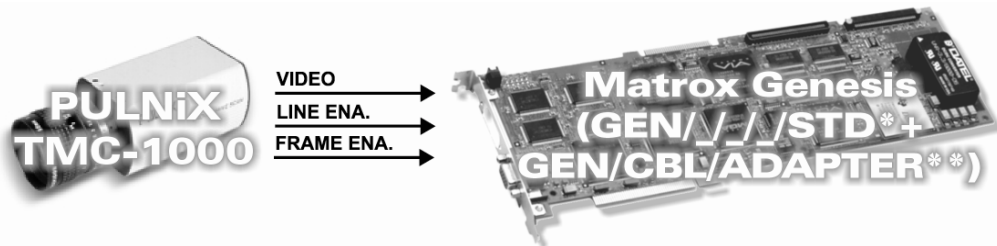
Interface Modes

- Continuous
- Asynchronous reset (Pulse Width Control mode)

Camera Interface Briefs

Mode 1: Continuous

- $1006 \times 1016 \times 24$ -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)

- $1006 \times 1016 \times 24$ -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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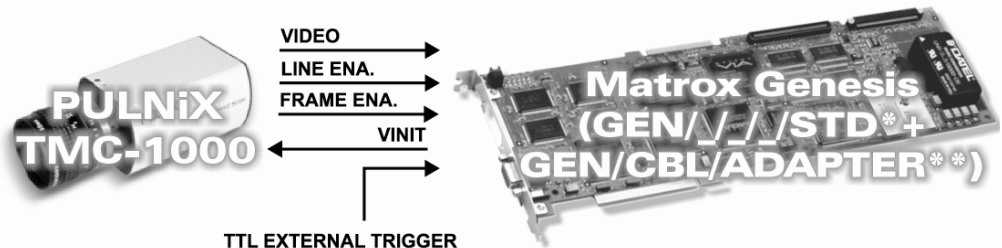
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Basics about the
interface modes

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 ms**.
- **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...

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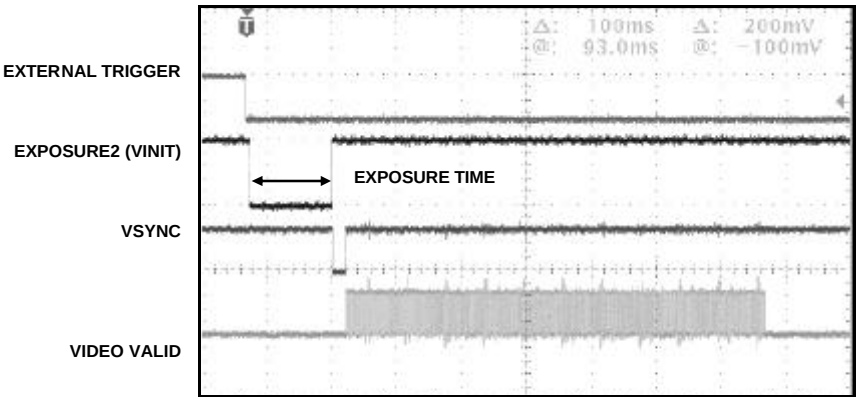
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Specifics about the interface modes

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)			PULNiX TMC-1000 (12-pin connector)	
Pin name	Pin no.		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)			PULNiX TMC-1000 (15-pin connector)	
Pin name	Pin no.		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

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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)

Pin name

Pin no.

EXPOSURE2, OUTPUT, TTL

58

→

GROUND

25

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+12 V

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PULNiX TMC-1000

(12-pin connector)

Pin name

Pin no.

VINIT

06

GND

01, 03, or 05

+12V DC IN

02

The DCF(s) mentioned in this application note can be found on the MIL CD and Native Library CD, or our FTP site ([ftp.matrox.com](ftp:ftp.matrox.com)). The information furnished by Matrox Electronic 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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