

Matrox Odyssey Xpro

Camera Interface Application Note

PULNiX TM-6701AN

July 28, 2006

Basics about the
camera

Camera Descriptions

- Effective resolution: $640 \times 480 \times 8\text{-bit}$ @ 60 fps.
- Single channel analog video output.
- Progressive scan.
- External or internal sync.
- External or internal exposure control.
- 25.49 MHz pixel clock rate.

Interface Modes

- Continuous
- Pseudo-continuous
- Asynchronous reset (External VINIT with controlled pulse width)

Camera Interface Briefs

Mode 1: Continuous

- $640 \times 480 \times 8\text{-bit}$ @ 60 fps
- $640 \times 240 \times 8\text{-bit}$ @ 120 fps.
- Single channel analog video.
- Progressive scan.
- Matrox Odyssey Xpro receiving video from camera.
- DCF used: [TM6701AN_640x480Con.DCF](#) (Progressive scan)
- DCF used: [TM6701AN_640x240Con.DCF](#) (Partial scan)



VIDEO



*Matrox Odyssey Xpro main board
with analog grab module

Mode 2: Pseudo-continuous

- $640 \times 480 \times 8\text{-bit}$
- $640 \times 240 \times 8\text{-bit}$.
- Single channel analog video.
- Progressive scan.
- Matrox Odyssey Xpro sending EXPOSURE1 (VINIT) signal to camera to initiate and control the exposure.
- Matrox Odyssey Xpro receiving video from camera.

Continued...

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

Basics about the
interface modes

Matrox Odyssey Xpro

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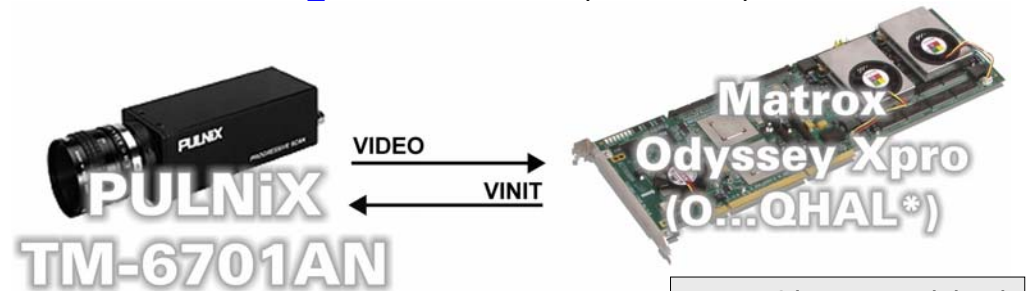
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Basics about the
interface modes

Camera Interface Briefs (continued)

Mode 2: Pseudo-continuous

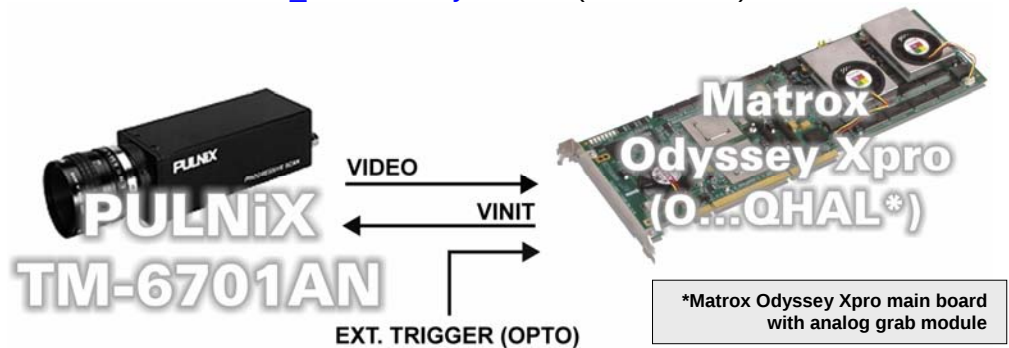
- DCF used: [TM6701AN_640x480Pcon.DCF](#) (Progressive scan)
- DCF used: [TM6701AN_640x240Pcon.DCF](#) (Partial scan)



*Matrox Odyssey Xpro main board
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Mode 3: Asynchronous Reset

- $640 \times 480 \times 8\text{-bit}$
- $640 \times 240 \times 8\text{-bit}$.
- Single channel analog video.
- Progressive scan.
- Matrox Odyssey Xpro receiving external trigger signal.
- Matrox Odyssey Xpro sending EXPOSURE1 (VINIT) signal to camera to initiate and control the exposure.
- Matrox Odyssey Xpro receiving video from camera.
- DCF used: [TM6701AN_640x480Async.DCF](#) (Progressive scan)
- DCF used: [TM6701AN_640x240Async.DCF](#) (Partial scan)



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Specifics about the
interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Odyssey Xpro receives the continuous video from the camera at 60 or 120 frames per second.
- **Exposure time:** Exposure time is controlled by the Shutter Control Switch (dial) on the camera's rear. Adjusting the shutter control does not affect the frame rate. Refer to the camera manual for more details.
- **Camera control settings:** Refer to the camera manual for more information. External settings are as follows:

Control	Settings	
	...640x480Con.DCF	...640x240Con.DCF
Shutter Control dial	0 (no shutter)	0 (no shutter)
ASY/NRM	NRM	NRM
N/P	N	N
O/T	O	T

Mode 2: Pseudo-continuous

- **Frame rate:** The frame rate is determined by the frequency of the EXPOSURE1 (VINIT) signal.
- **Exposure time:** The active duration of the EXPOSURE1 (VINIT) signal is the exposure time, which can be changed in the DCF by modifying Timer1 in Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera control settings:** Refer to the camera manual for more information. External settings are as follows:

Control	Settings	
	...640x480Pcon.DCF	...640x240Pcon.DCF
Shutter Control dial	9*	9*
ASY/NRM	ASY	ASY
N/P	N	N
O/T	O	T
* Shutter determined by pulse width		

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The active duration of the EXPOSURE1 (VINIT) signal is the exposure time, which can be changed in the DCF by modifying Timer1 in Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.

Matrox Odyssey Xpro

Camera Interface Application Note

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Specifics about the
interface modes

Camera Interface Details (cont.)

Mode 3: Asynchronous Reset

- **Camera control settings:** Refer to the camera manual for more information. External settings are as follows:

Control	Settings	
	...640x480Async.DCF	...640x240Async.DCF
Shutter Control dial	9*	9*
ASY/NRM	ASY	ASY
N/P	N	N
O/T	O	T
* Shutter determined by pulse width		

Cabling details for the
interface modes

Cabling Requirements

Mode 1: Continuous

- **Cable and Connection:** DVI-TO-8BNC/O (open end) cable required for video signal. The connection between the 12-pin connector of the camera and the Matrox Odyssey Xpro are as follow:

**Matrox Odyssey Xpro
(DVI connector-0)**

**PULNiX TM-9701
(12-pin connector)**

Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04

Mode 2: Pseudo-continuous

- **Cable and Connection:** DVI-TO-8BNC/O (open end) cable required for video signal. The connection between the 12-pin connector of the camera and the Matrox Odyssey Xpro are as follow:

**Matrox Odyssey Xpro
(DVI connector-0)**

**PULNiX TM-9701
(12-pin connector)**

Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
CH0_EXPOSURE	23	→	VINIT	06

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Mode 3: Asynchronous reset

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Matrox Odyssey Xpro (DVI connector-0)

PULNiX TM-9701 (12-pin connector)

Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
CH0_EXPOSURE	23	→	VINIT	06

- **External trigger:** External trigger should be connected to the OPTO TRIG input of the 9-pin connector (pins 7 and 2) on the external trigger input connector 1 (cable adapter board).

External trigger input (9-pin connector)

External Trigger Source

OPTOTRIG +	07	←	SIGNAL	--
OPTOTRIG -	02	←	GROUND	--

The DCFs mentioned in this application note are also attached (embedded) to this PDF file – use the Adobe Reader's View File Attachment to access the DCF files. 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. © Matrox Electronic Systems Ltd, 2006-2011.

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