

Matrox Odyssey Xpro

Camera Interface Application Note

ADIMEC MX12D

October 13, 2005

Basics about the
camera

Camera Descriptions

- Effective resolution: $1024 \times 1024 \times 12\text{-bit}$ @ 30 fps.
- Single channel LVDS digital video output.
- Progressive or interlaced scan.
- Internal (separate) sync.
- External and internal exposure control.
- 40 MHz pixel clock rate.

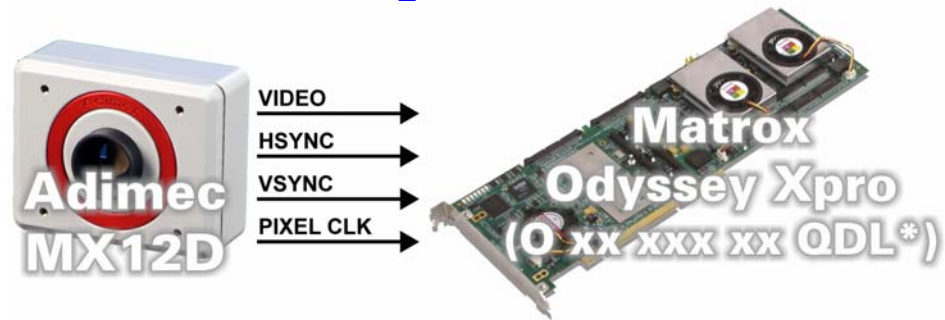
Interface Mode

- Continuous
- Pseudo-continuous
- Asynchronous rest (control mode)

Camera Interface Briefs

Mode 1: Continuous

- $1024 \times 1024 \times 12\text{-bit}$ @ 30 fps.
- Single channel LVDS digital video.
- Progressive scan.
- Matrox Odyssey Xpro receiving HSYNC (LEN) VSYNC (FEN), PIXEL CLOCK (CLK) and video from camera.
- DCF used: [MX12D1024x1024_12bitCon.DCF](#)



Mode 2: Pseudo-continous

- $1024 \times 1024 \times 12\text{-bit}$.
- Single channel LVDS digital video.
- Progressive scan.
- Matrox Odyssey Xpro sending EXPOSURE1 (EXPOSURE) signal to camera to initiate and control the exposure.
- Matrox Odyssey Xpro receiving HSYNC (LEN) VSYNC (FEN), PIXEL CLOCK (CLK) and video from camera.

*Matrox Odyssey Xpro main board
with Digital grab module

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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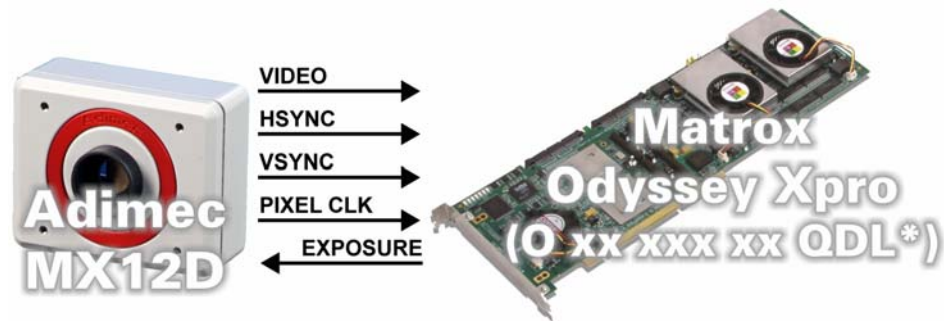
October 13, 2005

Basics about the
interface modes

Camera Interface Briefs (cont.)

Mode 2: Pseudo-continuous

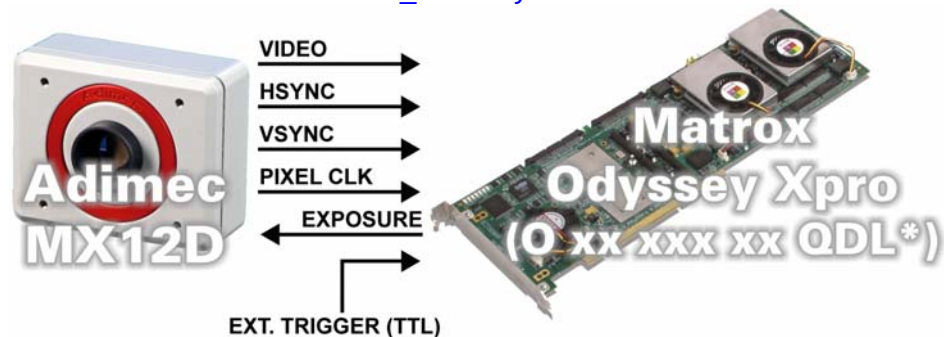
- DCF used: [MX12D1024x1024_12bitPCon.DCF](#)



Mode 3: Asynchronous reset

- 1024 × 1024 × 12-bit.
- Single channel LVDS digital video.
- Progressive scan.
- Matrox Odyssey Xpro receiving external trigger signal.
- Matrox Odyssey Xpro sending EXPOSURE1 (EXPOSURE) signal to camera to initiate and control the exposure.
- Matrox Odyssey Xpro receiving HSYNC (LEN) VSYNC (FEN), PIXEL CLOCK (CLK) and video from camera.
- DCF used: [MX12D1024x1024_12bitAsync.DCF](#)

*Matrox Odyssey Xpro main board
with Digital grab module



*Matrox Odyssey Xpro main board
with Digital grab module

Camera Interface Details

Mode 1: Continuous

- Frame Rate:** Matrox Odyssey Xpro receives the continuous video from the camera at 30 frames per second.
- Exposure time:** Exposure time is inversely proportionate to the frame rate or determined by the camera's shutter setting. Refer to the camera manual for more information.
- Camera Control:** The camera mode is set to **Continuous mode** in the Adimec control software. Refer to the camera manual for more information.

Specifics about
the interface modes

Matrox Odyssey Xpro

Camera Interface Application Note

ADIMEC MX12D

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Specifics about the
interface modes

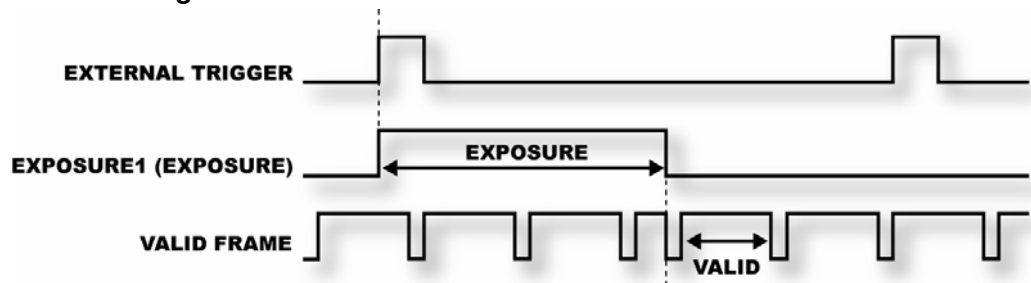
Camera Interface Details

Mode 2: Pseudo-continuous

- **Frame Rate:** The frame rate is determined by the period of the EXPOSURE1 (EXPOSURE) signal, which can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Exposure time:** The width (rising edge to falling edge) of the EXPOSURE1 (EXPOSURE) signal is the exposure time, which can be modified in the DCF using Matrox Intellicam, with the ONL imCamControl() or imDigControl() function, or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera Control:** The camera mode is set to **Control mode** in the Adimec control software. Refer to the camera manual for more information.

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the TTL external trigger signal.
- **Exposure time:** Refer to Mode 2: Pseudo-continuous.
- **Camera Control:** Refer to Mode 2: Pseudo-continuous.
- **Timings:**



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Camera Interface Application Note

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*Cabling details for this
interface mode*

Cabling Requirements

Modes 1 and 2: Continuous

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **Connection:** Connections between the 68-pin quad row connector of the camera and the 100-pin connector of the Matrox Odyssey Xpro are as follows:

ADIMEC MX12D (68-pin connector)			Matrox Odyssey (100-pin connector)	
<i>Pin name</i>	<i>Pin no.</i>		<i>Pin name</i>	<i>Pin no.</i>
D11+	02	→	P0_LVDS_DATA_IN11+	23
D10+	03	→	P0_LVDS_DATA_IN10+	21
D09+	04	→	P0_LVDS_DATA_IN9+	19
D08+	05	→	P0_LVDS_DATA_IN8+	17
D07+	06	→	P0_LVDS_DATA_IN7+	15
D06+	07	→	P0_LVDS_DATA_IN6+	13
D05+	08	→	P0_LVDS_DATA_IN5+	11
D04+	09	→	P0_LVDS_DATA_IN4+	09
D03+	10	→	P0_LVDS_DATA_IN3+	07
D02+	11	→	P0_LVDS_DATA_IN2+	05
D01+	13	→	P0_LVDS_DATA_IN1+	03
D00+	14	→	P0_LVDS_DATA_IN0+	01
FEN+	25	→	P0_LVDS_AUX(VSYNC)_IN+	35
LEN+	26	→	P0_LVDS_HSYNC_IN+	33
CLK+	29	→	P0_LVDS_CLK_IN+	39
TRG+	30	←	P1_LVDS/TTL_AUX(EXP)_OUT2+	95
GND	34	→	GROUND	50
D11-	36	→	P0_LVDS_DATA_IN11-	24
D10-	37	→	P0_LVDS_DATA_IN10-	22
D09-	38	→	P0_LVDS_DATA_IN9-	20
D08-	39	→	P0_LVDS_DATA_IN8-	18
D07-	40	→	P0_LVDS_DATA_IN7-	16
D06-	41	→	P0_LVDS_DATA_IN6-	14
D05-	42	→	P0_LVDS_DATA_IN5-	12
D04-	43	→	P0_LVDS_DATA_IN4-	10
D03-	44	→	P0_LVDS_DATA_IN3-	08
D02-	45	→	P0_LVDS_DATA_IN2-	06
D01-	47	→	P0_LVDS_DATA_IN1-	04
D00-	48	→	P0_LVDS_DATA_IN0-	02
FEN-	59	→	P2_LVDS_AUX(VSYNC)_IN-	36

Continued...

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*Cabling details for this
interface mode*

Cabling Requirements (continued)

Modes 1 and 2: Continuous

ADIMEC MX12D (68-pin connector)			Matrox Odyssey (100-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
LEN-	60	→	P2_LVDS_HSYNC_IN-	34
CLK-	63	→	P2_LVDS_CLK_IN-	40
TRG-	64	←	P3_LVDS/TTL_AUX(EXP)_OUT2-	96
GND	68	→	GROUND	100

Mode 3: Asynchronous reset

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **External trigger:** External trigger should be connected to the OPTO TRIG input of the 9-pin connector (pins 7 and 2) on the RS-232\Trigger Input bracket.

RS-232\Trigger Bracket (9-pin connector)			External Trigger Source	
OPTOTRIG +	07	←	LINE SIGNAL	--
OPTOTRIG -	02	←	LINE GROUND	--

NOTE contact ADIMEC for information regarding the RS-232 to RS-422 converter.

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, 2005-2011.

Matrox Electronic Systems Ltd.

1055 St. Regis Blvd.
Dorval, Quebec H9P 2T4
Canada
Tel: (514) 685-2630
Fax: (514) 822-6273

ODY-CID-120

