

# MATROX GENESIS

## CAMERA INTERFACE APPLICATION NOTE

### REDLAKE MASD (KODAK) 1.4iHF

JUNE 19, 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

- $1317 \times 1035 \times 8$ -bit @ 10 fps.
- Single channel RS-422 digital video output.
- Progressive scan.
- External sync.
- Internal or external exposure control.
- 15 MHz pixel clock rate.

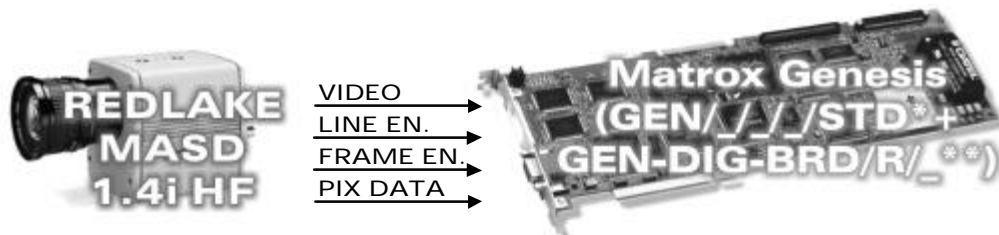
#### Interface Modes

- Pseudo-continuous
- Asynchronous reset (Trigger, Control)

#### Camera Interface Briefs

##### **Mode 1: Pseudo-continuous**

- $1317 \times 1035 \times 8$ -bit @ 4 fps.
- Single channel RS-422 digital video.
- Progressive scan.
- Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA STRB @ 15 MHz) and video signals from camera.
- DCF used: [K14IHFD.DCF](#)



##### **Mode 2: Asynchronous Reset (Trigger, Control)**

- $1317 \times 1035 \times 8$ -bit.
- Single channel RS-422 digital video.
- Progressive scan.
- Matrox Genesis receiving external trigger signal.
- Matrox Genesis sending EXPOSURE1 (EXPOSE) signal to camera to initiate and control exposure time.
- Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA STRB @ 15 MHz) and video signals from camera.

Continued...

\*Matrox Genesis main board with grab module  
\*\*MatroxRS-422 digital data input board

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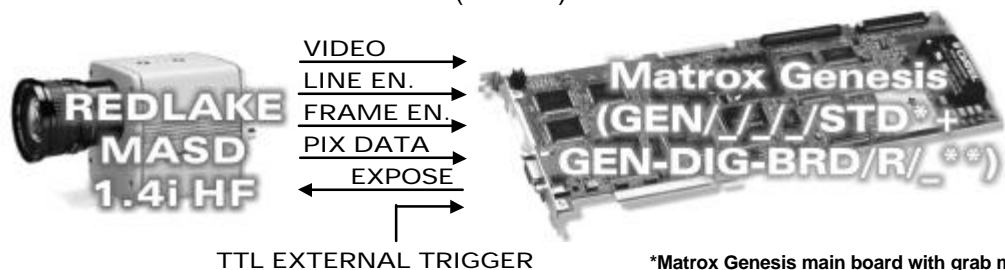
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Basics about the  
interface modes

#### Camera Interface Briefs (Continued)

##### *Mode 2: Asynchronous Reset (Trigger, Control)*

- DCF used: [K14IHFDA.DCF](#) (Trigger)
- DCF used: [K14IHFAE.DCF](#) (Control)



\*Matrox Genesis main board with grab module  
\*\*MatroxRS-422 digital data input board

Specifics about the  
interface modes

#### Camera Interface Details

##### *Mode 1: Pseudo-continuous*

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 4 frames per second.
- **Exposure time:** Exposure time is inversely proportionate to the frame rate (no shutter) or determined by the shutter setting (remote panel software). Refer to the camera manual for more information.
- **Remote Panel software settings:** Operating mode set to **Continuous**. Refer to the camera manual for additional information.

##### *Mode 2: Asynchronous Reset (Trigger)*

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The rising edge of the EXPOSURE1 (EXPOSE) signal initiates the exposure; exposure period is controlled through the Remote Panel software. Refer to the camera manual for more information.
- **Remote Panel software settings:** Operating mode set to **Trigger**. Refer to the camera manual for additional information.

##### *Mode 2: Asynchronous Reset (Control)*

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The width (rising to falling edge) of the EXPOSURE1 (EXPOSE) signal initiates and controls the exposure. The exposure time can be modified in the DCF using Matrox Intellicam, Genesis Native Library (GNL) `imCamControl()` or with the MIL `MdigControl()` function. Consult the respective manual for more information.
- **Remote Panel software settings:** Operating mode set to **Control**. Refer to the camera manual for additional information.

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## CAMERA INTERFACE APPLICATION NOTE

### REDLAKE MASD (KODAK) 1.4iHF

### JUNE 19, 2001

Cabling details for this  
interface mode

#### Cabling Requirements

##### Mode 1: Pseudo-continuous

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

GEN-DIG-BRD/R/ (100-pin connector)			REDLAKE MASD 1.4i HF (68-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
DATA, INPUT, 7+	15	←	MSB+	02
DATA, INPUT, 7-	16	←	MSB-	36
DATA, INPUT, 6+	13	←	MSB-1+	03
DATA, INPUT, 6-	14	←	MSB-1-	37
DATA, INPUT, 5+	11	←	MSB-2+	04
DATA, INPUT, 5-	12	←	MSB-2-	38
DATA, INPUT, 4+	09	←	MSB-3+	05
DATA, INPUT, 4-	10	←	MSB-3-	39
DATA, INPUT, 3+	07	←	MSB-4+	06
DATA, INPUT, 3-	08	←	MSB-4-	40
DATA, INPUT, 2+	05	←	MSB-5+	07
DATA, INPUT, 2-	06	←	MSB-5-	41
DATA, INPUT, 1+	03	←	MSB-6+	08
DATA, INPUT, 1-	04	←	MSB-6-	42
DATA, INPUT, 0+	01	←	MSB-7+	09
DATA, INPUT, 0-	02	←	MSB-7-	43
CLOCK, INPUT, +	39	←	PIX DATA STRB +	29
CLOCK, INPUT, -	40	←	PIX DATA STRB -	63
HSYNC, INPUT, +	33	←	LINE ENA +	26
HSYNC, INPUT, -	34	←	LINE ENA -	60
VSYNC, INPUT, +	35	←	FRME ENA +	25
VSYNC, INPUT, -	36	←	FRME ENA -	59
EXPOSURE1, OUTPUT, +	95*	→	EXPOSE +	30*
EXPOSURE1, OUTPUT, -	96*	→	EXPOSE -	64*
GROUND	50	--	GROUND	01

\* Connection not necessary for this mode however allows this cable to be used for both modes.

##### Mode 2: Asynchronous Reset (Trigger, Control)

- **Cable:** IMG-7W2-TO-5BNC and DBHD100-TO-OPEN (open ended) cables required for video, synchronization and control signals.
- **External Trigger:** TTL external trigger source should be connected to the TTL trigger input of IMG-7W2-TO-5BNC cable.
- **Connection:** All connections are as in Mode 1: *Pseudo-continuous*.

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## CAMERA INTERFACE APPLICATION NOTE

### REDLAKE MASD (KODAK) 1.4iHF

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Cabling details for the  
interface modes

#### ***Cabling Requirements (Continued)***

##### ***Mode 2: Asynchronous Reset (Trigger, Control)***

- An RS-422 external trigger input may also be used once the following connections between the 100-pin connector of the GEN-DIG-BRD/R/\_ and the external trigger source are made:

**GEN-DIG-BRD/R/\_  
(100-pin connector)**

**EXTERNAL TRIGGER SOURCE**

<i>Pin name</i>	<i>Pin no.</i>		<i>Pin name</i>	<i>Pin no.</i>
TRIGGER, +	47	←	RS-422 TRIGGER +	--
TRIGGER, -	48	←	RS-422 TRIGGER -	--

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