MATROX GENESIS CAMERA INTERFACE APPLICATION NOTE REDLAKE MASD (KODAK) ES310 JULY 30, 2001

Basics about the camera

Camera Descriptions

- 648 × 484 × 8-bit @ up to 85 fps.
- Single or dual channel RS-422 digital video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 20 MHz pixel clock rate.

Interface Modes

- Continuous
- Asynchronous reset (Trigger)

Camera Interface Briefs

Mode 1: Continuous

- 648 × 484 × 8-bit @ 30/60 fps.
- Dual channel RS-422 digital video.
- Progressive scan.
- Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA @ 20 MHz) and video signals from camera.
- DCF used: ES310_30.DCF (30 fps)
- DCF used: ES310_60.DCF (60 fps)



Mode 2: Asynchronous Reset (Trigger)

- 648 × 484 × 8-bit.
- Dual 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 @ 20 MHz) and video signals from camera.

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

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

Basics about the interface modes

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Basics about the interface modes

Camera Interface Briefs (Continued)

Mode 2: Asynchronous Reset (Trigger)

DCF used: G310ASY.DCF



Specifics about the interface modes TTL EXTERNAL TRIGGER

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

Camera Interface Details

Mode 1: Continuous

- Frame Rate: Matrox Genesis receives the continuous video from the camera at 30/60 frames per second.
- **Exposure time:** Exposure time is controlled by the Remote Panel software setting, and can be set between **0.1** and **12** ms.
- Remote Panel software settings: Refer to the camera manual for additional information. Settings for this mode should be set as follows:

ES310_30.DCF (30 fps)				
MDE	EXE	TRS	FRS	
CS	9	AIA	30	

ES310_60.DCF (60 fps)				
MDE	EXE	TRS	FRS	
CS	9	AIA	60	

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, and can be set between **0.05** and **12** ms. Refer to the camera manual for more information.
- **Remote Panel software settings:** Refer to the camera manual for additional information. Settings for this mode should be set as follows:



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Cabling details for this interface mode

Cabling Requirements

Mode 1: 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:

	EN-DIG-BRD/R/_ 00-pin connector)			REDLAKE MASD 1.4i HF (68-pin connector)		
	Pin name	Pin no.		Pin name	Pin no.	
	DATA, INPUT, 7+	15	\leftarrow	BMSB +	10	
	DATA, INPUT, 7-	16	\leftarrow	BMSB -	44	
	DATA, INPUT, 6+	13	\leftarrow	BMSB1 +	11	
	DATA, INPUT, 6-	14	\leftarrow	BMSB1 -	45	
	DATA, INPUT, 5+	11	\leftarrow	BMSB2 +	13	
	DATA, INPUT, 5-	12	\leftarrow	BMSB2 -	47	
	DATA, INPUT, 4+	09	\leftarrow	BMSB3 +	14	
	DATA, INPUT, 4-	10	\leftarrow	BMSB3 -	48	
	DATA, INPUT, 3+	07	\leftarrow	BMSB4 +	15	
	DATA, INPUT, 3-	08	\leftarrow	BMSB4 -	49	
	DATA, INPUT, 2+	05	\leftarrow	BMSB5 +	16	
	DATA, INPUT, 2-	06	\leftarrow	BMSB5 -	50	
	DATA, INPUT, 1+	03	\leftarrow	BMSB6 +	19	
	DATA, INPUT, 1-	04	\leftarrow	BMSB6 -	53	
	DATA, INPUT, 0+	01	\leftarrow	BMSB7 +	20	
	DATA, INPUT, 0-	02	\leftarrow	BMSB7 -	54	
	CLOCK, INPUT, +	39	\leftarrow	PIX DATA STRB +	29	
	CLOCK, INPUT, -	40	\leftarrow	PIX DATA STRB -	63	
	HSYNC, INPUT, +	33	\leftarrow	LINE ENA +	26	
	HSYNC, INPUT, -	34	\leftarrow	LINE ENA -	60	
	VSYNC, INPUT, +	35	\leftarrow	FRAME ENA +	25	
	VSYNC, INPUT, -	36	\leftarrow	FRAME ENA -	59	
	EXPOSURE1, OUTPUT, +	95*	\rightarrow	EXPOSE +	30*	
	EXPOSURE1, OUTPUT, -	96*	\rightarrow	EXPOSE -	64*	
	GROUND	50		GROUND	01	
	DATA, INPUT, 15+	31	\leftarrow	AMSB +	02	
	DATA, INPUT, 15-	32	\leftarrow	AMSB -	36	
	DATA, INPUT, 14+	29	\leftarrow	AMSB1 +	03	
	DATA, INPUT, 14-	30	\leftarrow	AMSB1 -	37	
	DATA, INPUT, 13+	27	\leftarrow	AMSB2 +	04	
	DATA, INPUT, 13-	28	\leftarrow	AMSB2 -	38	
	DATA, INPUT, 12+	25	\leftarrow	AMSB3 +	05	
	DATA, INPUT, 12-	26	\leftarrow	AMSB3 -	39	
	DATA, INPUT, 11+	23	\leftarrow	AMSB 4+	06	
	DATA, INPUT, 11-	24	\leftarrow	AMSB 4-	40	
* Cor	praction not pacessary for this n	ando howow	or allows th	is cable to be used for	both modes	

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

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Cabling Requirements (Continued) Mode 1: Pseudo-continuous

 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) <i>Pin nam</i> e	Pin no.		REDLAKE MASD 1 (68-pin connector) <i>Pin nam</i> e	.4i HF <i>Pin no.</i>
DATA, INPUT, 10+	21	\leftarrow	AMSB 5+	07
DATA, INPUT, 10-	22	\leftarrow	AMSB 5-	41
DATA, INPUT, 9+	19	\leftarrow	AMSB 6+	08
DATA, INPUT, 9-	20	\leftarrow	AMSB 6-	42
DATA, INPUT, 8+	17	\leftarrow	AMSB 7+	09
DATA, INPUT, 8-	18	\leftarrow	AMSB 7-	43

Mode 2: Asynchronous Reset (Trigger)

- **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 other connections are as in Mode 1: Pseudo-continuous

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). 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.

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Cabling details for this interface mode