

MATROX GENESIS

CAMERA INTERFACE APPLICATION NOTE

REDLAKE MASD (KODAK) ES310 JULY 30, 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

- $648 \times 484 \times 8$ -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.

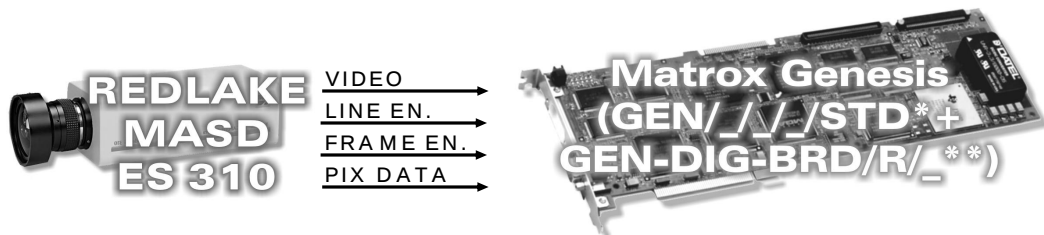
Interface Modes

- Continuous
- Asynchronous reset (Trigger)

Camera Interface Briefs

Mode 1: Continuous

- $648 \times 484 \times 8$ -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)

- $648 \times 484 \times 8$ -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

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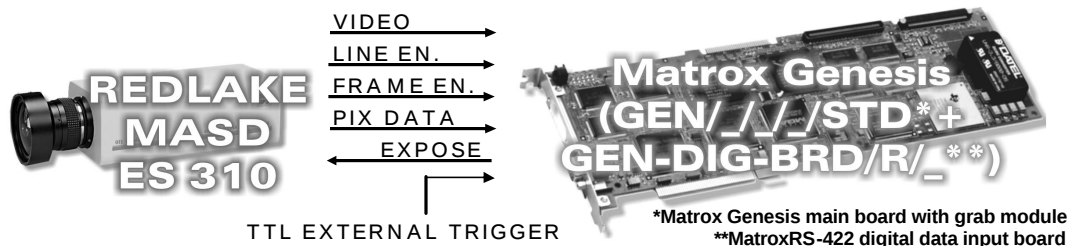
JULY 30, 2001

Basics about the
interface modes

Camera Interface Briefs (Continued)

Mode 2: Asynchronous Reset (Trigger)

- DCF used: [G310ASY.DCF](#)



Specifics about the
interface modes

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:

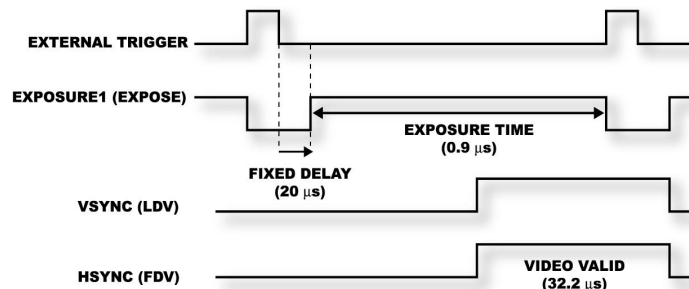
ES310_30.DCF (30 fps)			
MDE	EXE	TRS	FRS
CS	9	AIA	30

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:

G310ASY.DCF			
MDE	EXE	TRS	FRS
TR	9	AIA	30*



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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:

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	←	BMSB +	10
DATA, INPUT, 7-	16	←	BMSB -	44
DATA, INPUT, 6+	13	←	BMSB1 +	11
DATA, INPUT, 6-	14	←	BMSB1 -	45
DATA, INPUT, 5+	11	←	BMSB2 +	13
DATA, INPUT, 5-	12	←	BMSB2 -	47
DATA, INPUT, 4+	09	←	BMSB3 +	14
DATA, INPUT, 4-	10	←	BMSB3 -	48
DATA, INPUT, 3+	07	←	BMSB4 +	15
DATA, INPUT, 3-	08	←	BMSB4 -	49
DATA, INPUT, 2+	05	←	BMSB5 +	16
DATA, INPUT, 2-	06	←	BMSB5 -	50
DATA, INPUT, 1+	03	←	BMSB6 +	19
DATA, INPUT, 1-	04	←	BMSB6 -	53
DATA, INPUT, 0+	01	←	BMSB7 +	20
DATA, INPUT, 0-	02	←	BMSB7 -	54
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
VSNC, INPUT, +	35	←	FRAME ENA +	25
VSNC, INPUT, -	36	←	FRAME ENA -	59
EXPOSURE1, OUTPUT, +	95*	→	EXPOSE +	30*
EXPOSURE1, OUTPUT, -	96*	→	EXPOSE -	64*
GROUND	50		GROUND	01
DATA, INPUT, 15+	31	←	AMSB +	02
DATA, INPUT, 15-	32	←	AMSB -	36
DATA, INPUT, 14+	29	←	AMSB1 +	03
DATA, INPUT, 14-	30	←	AMSB1 -	37
DATA, INPUT, 13+	27	←	AMSB2 +	04
DATA, INPUT, 13-	28	←	AMSB2 -	38
DATA, INPUT, 12+	25	←	AMSB3 +	05
DATA, INPUT, 12-	26	←	AMSB3 -	39
DATA, INPUT, 11+	23	←	AMSB 4+	06
DATA, INPUT, 11-	24	←	AMSB 4-	40

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

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Cabling details for this
interface mode

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)			REDLAKE MASD 1.4i HF (68-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
DATA, INPUT, 10+	21	←	AMSB 5+	07
DATA, INPUT, 10-	22	←	AMSB 5-	41
DATA, INPUT, 9+	19	←	AMSB 6+	08
DATA, INPUT, 9-	20	←	AMSB 6-	42
DATA, INPUT, 8+	17	←	AMSB 7+	09
DATA, INPUT, 8-	18	←	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](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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