

MATROX PULSAR

CAMERA INTERFACE APPLICATION NOTE

REDLAKE MASD (KODAK) ES1.0

JUNE 19, 2001

Basics about the
camera

Camera Descriptions

- $1008 \times 1018 \times 8/10$ -bit @ 15/30 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.

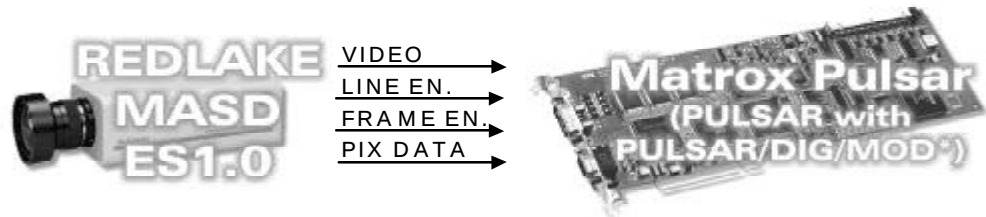
Interface Modes

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

Camera Interface Briefs

Mode 1: Pseudo-continuous

- $1008 \times 1018 \times 8$ -bit @ 15 fps.
- Dual channel RS-422 digital video.
- Progressive scan.
- Matrox Pulsar receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA @ 20 MHz) and video from camera.
- DCF used: [ES10D.DCF](#)



Mode 2: Asynchronous Reset (Trigger, Control)

- $1008 \times 1018 \times 8$ -bit.
- Dual channel RS-422 digital video.
- Progressive scan.
- Matrox Pulsar receiving TTL external trigger signal.
- Matrox Pulsar sending EXPOSURE1 (EXPOSE) signal to camera to initiate and control exposure time.
- Matrox Pulsar receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA @ 20 MHz) and video signals from camera.

Continued...

*Matrox Pulsar RS-422 digital data input board

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

Basics about the
interface modes

MATROX PULSAR

CAMERA INTERFACE APPLICATION NOTE

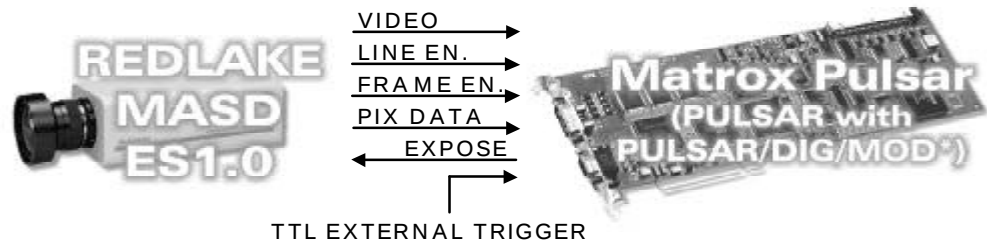
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Basics about the interface modes

Camera Interface Briefs (Cont.)

Mode 2: Asynchronous Reset (Trigger, Control)

- DCF used: [ES10DA.DCF](#) (Trigger)
- DCF used: [ES10DAE.DCF](#) (Control)



*Matrox Pulsar RS-422 digital data input board

Specifics about the interface modes

Camera Interface Details

Mode 1: Pseudo-continuous

- **Frame Rate:** Matrox Pulsar receives the continuous video from the camera at 15 frames per second.
- **Exposure time:** Exposure time is controlled by the Remote Panel software. Refer to the camera manual for more information.
- **Remote Panel software settings:** Settings for this mode are as follows:

DEF	GAB	BKB	BKE	MDE	EXE	STP	TRM	TRS	TRE	RDM	TPD	TPW	DGN
on	-22	0	0	CS	15.096	P	P	AIA	1	2*	255	5	2

* Single channel = 1, dual channel = 2

Mode 2: Asynchronous Reset (Trigger)

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** Exposure time is controlled by the Remote Panel software. Refer to the camera manual for more information.
- **Remote Panel software settings:** Settings for this mode are as follows:

DEF	GAB	BKB	BKE	MDE	EXE	STP	TRM	TRS	TRE	RDM	TPD	TPW	DGN
on	-22	0	0	*	15.096	P	P	AIA	1	**	255	5	2

* Trigger mode = TR, Control mode = CD **Single channel = 1, dual channel = 2

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 or with the MIL MdigControl() function. Default exposure for this DCF is **1 second**. Consult the manual for more information.
- **Remote Panel software settings:** Settings for this mode are as follows:

DEF	GAB	BKB	BKE	MDE	EXE	STP	TRM	TRS	TRE	RDM	TPD	TPW	DGN
on	-22	0	0	*	15.096	P	P	AIA	1	**	255	5	2

* Trigger mode = TR, Control mode = CD **Single channel = 1, dual channel = 2

MATROX PULSAR

CAMERA INTERFACE APPLICATION NOTE

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*Cabling details for this
interface mode*

Cabling Requirements

Mode 1: Pseudo-continuous

- **Cable:** DBHD68-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **Connection:** Connections between the 68-pin connector of the camera and the 68-pin connectors of the Matrox Pulsar are as follows:

PULSAR/DIG/MOD (68-pin connector)			REDLAKE MASD ES 1.0 (68-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
DATA7+	10	←	MSB+	02
DATA7-	44	←	MSB-	36
DATA6+	11	←	MSB-1+	03
DATA6-	45	←	MSB-1-	37
DATA5+	13	←	MSB-2+	04
DATA5-	47	←	MSB-2-	38
DATA4+	14	←	MSB-3+	05
DATA4-	48	←	MSB-3-	39
DATA3+	15	←	MSB-4+	06
DATA3-	49	←	MSB-4-	40
DATA2+	16	←	MSB-5+	07
DATA2-	50	←	MSB-5-	41
DATA1+	19	←	MSB-6+	08
DATA1-	53	←	MSB-6-	42
DATA0+	20	←	MSB-7+	09
DATA0-	54	←	MSB-7-	43
CLKIN+	29	←	PIX DATA STRB+	29
CLKIN-	63	←	PIX DATA STRB-	63
HSYNC+	26	←	LINE ENA+	26
HSYNC-	60	←	LINE ENA-	60
VSYNC+	25	←	FRME ENA+	25
VSYNC-	59	←	FRME ENA-	59
EXPOSURE1+	30*	→	EXPOSE+	30*
EXPOSURE1-	64*	→	EXPOSE-	64*
TTL_USR0	31	→	C0	31
TTL_USR1	32	→	MC1	32
TTL_USR2	33	→	MC2	33
GROUND	01	--	GROUND	01
GROUND	12	--	GROUND	12
GROUND	34	--	GROUND	34
GROUND	35	--	GROUND	35
GROUND	46	--	GROUND	46
GROUND	68	--	GROUND	68

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

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CAMERA INTERFACE APPLICATION NOTE

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*Cabling details for this
interface mode*

Cabling Requirements (Continued)

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

- **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*.

The DCF(s) mentioned in this application note can be found on the MIL or our FTP site ([ftp.matrox.com](ftp: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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