MATROX PULSAR
CAMERA INTERFACE APPLICATION NOTE
REDLAKE MASD (KODAK) 4.2i JUNE 19, 2001

Basics about the camera

Camera Descriptions

- 2029 × 2044 × 8/10-bit @ 2 fps (maximum).
- Single or dual channel RS-422 digital video output.
- Progressive scan.
- External sync.
- Internal or external exposure control.
- 10 MHz pixel clock rate.

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

Interface Modes

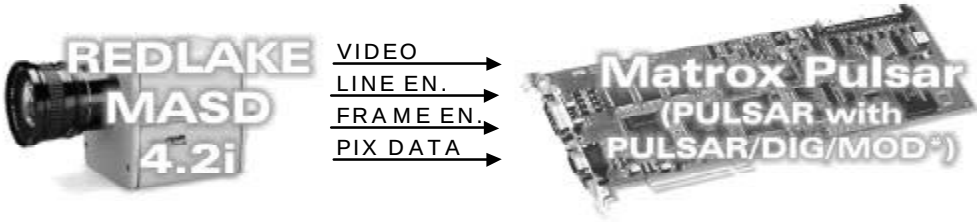
- Pseudo-continuous
- Asynchronous reset (Trigger, Control)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Pseudo-continuous

- 2028 × 2043 × 8-bit @ 2 fps.
- 2024 × 2041 × 10-bit @ 2 fps.
- Dual channel RS-422 digital video.
- Progressive scan.
- Matrox Pulsar receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA @ 10 MHz) and video from camera.
- DCF used: KOD42D.DCF (8-bit)
- DCF used: K4210D.DCF (10-bit)



Mode 2: Asynchronous Reset (Trigger, Control)

- 2028 × 2043 × 8-bit.
- 2024 × 2041 × 10-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 @ 10 MHz) and video signals from camera.

Continued…

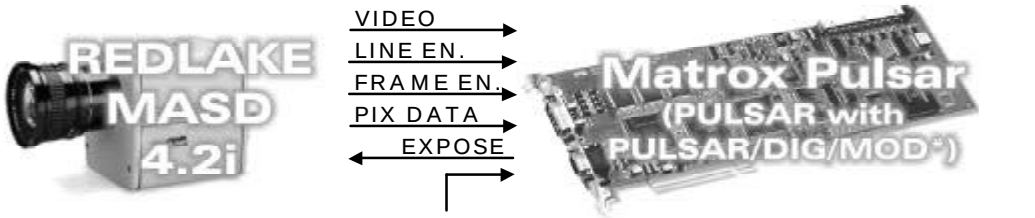
***Matrox Pulsar RS-422 digital data input board**

Basics about the interface modes

Camera Interface Briefs (Cont.)

Mode 2: Asynchronous Reset (Trigger, Control)

- DCF used: KOD42DA.DCF (Trigger, 8-bit)
- DCF used: K4210DA.DCF (Trigger, 10-bit)
- DCF used: KOD42DAE.DCF (Control, 8-bit)
- DCF used: K4210DAE.DCF (Control, 10-bit)



***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 10 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	PI	15.096	P	P	AIA	1	1	255	5	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	TR	15.096	P	P	AIA	1	1	255	5	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. 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	CD	15.096	P	P	AIA	1	1	255	5	2

Cabling details for this interface mode

Cabling Requirements

Mode 1: Pseudo-continuous (8-bit)

- **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 4.2i (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	→	MC0	31
TTL_USR1	32	→	MC1	32
TTL_USR2	33	→	MC2	33
GROUND	1	--	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.

Cabling details for this interface mode

Cabling Requirements (continued)

Mode 1: Pseudo-continuous (10-bit)

- **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 4.2i (68-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
DATA9+	08	←	MSB+	02
DATA9-	42	←	MSB-	36
DATA8+	09	←	MSB-1+	03
DATA8-	43	←	MSB-1-	37
DATA7+	10	←	MSB-2+	04
DATA7-	44	←	MSB-2-	38
DATA6+	11	←	MSB-3+	05
DATA6-	45	←	MSB-3-	39
DATA5+	13	←	MSB-4+	06
DATA5-	47	←	MSB-4-	40
DATA4+	14	←	MSB-5+	07
DATA4-	48	←	MSB-5-	41
DATA3+	15	←	MSB-6+	08
DATA3-	49	←	MSB-6-	42
DATA2+	16	←	MSB-7+	09
DATA2-	50	←	MSB-7-	43
DATA1+	19	←	MSB-8+	10
DATA1-	53	←	MSB-8-	44
DATA0+	20	←	MSB-9+	11
DATA0-	54	←	MSB-9-	45
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	→	MC0	31
TTL_USR1	32	→	MC1	32
TTL_USR2	33	→	MC2	33
GROUND	1	--	GROUND	01
GROUND	12	--	GROUND	12

* 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 *-bit or 10-bit* respectively.

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