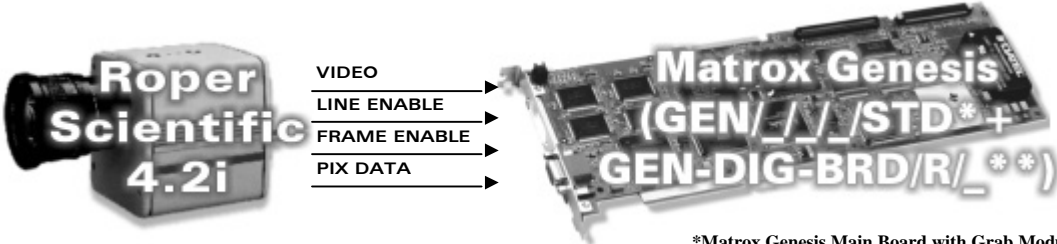
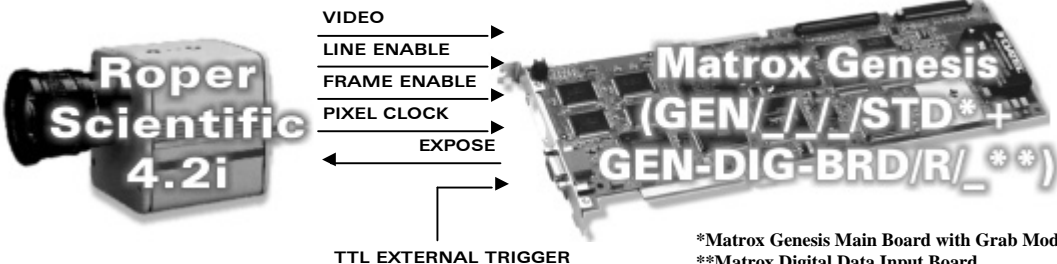


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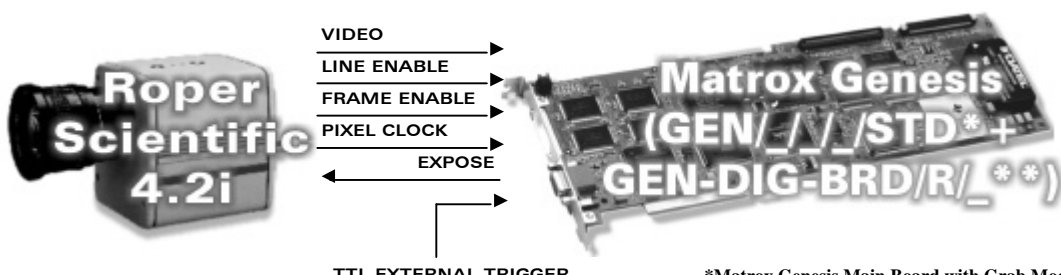
Camera Descriptions	<ul style="list-style-type: none"> • 2029 × 2044 × 8 or 10-bit @ up to 2 fps (maximum) • Single or dual channel RS-422 digital video output. • Progressive scan. • Internal or external exposure control. • Internal or external shutter control (shutter on/off). • Pixel clock rate: 10 MHz.
Interface mode	<ul style="list-style-type: none"> • Pseudo-continuous, asynchronous reset (trigger, control)
Camera Interface Briefs	<p>Mode 1: Pseudo-continuous Mode</p>  <ul style="list-style-type: none"> • 2029 × 2044 × 8 or 10-bit @ up to 2 fps • Dual channel RS-422 digital video. • Progressive scan. • Continuous video. • Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA @ 10 MHz/channel), and video signals. • DCF used: KOD42D.DCF (8-bit) • DCF used: K4210D.DCF (10-bit) <p>Mode 2: Asynchronous reset (Trigger)</p>  <ul style="list-style-type: none"> • 2029 × 2044 × 8 or 10-bit. • Dual channel RS-422 digital video. • Progressive scan. • Matrox Genesis receiving TTL external trigger. • Matrox Genesis sends EXPOSURE1 (EXPOSE) signal to camera to initiate exposure. • Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA @ 10 MHz/channel), and video signals. • DCF used: KOD42DA.DCF (8-bit) • DCF used: K4210DA.DCF (10-bit) <p><small>*Matrox Genesis Main Board with Grab Module **Matrox Digital Data Input Board</small></p>

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<p>Camera Interface Briefs (continued)</p>	<p>Mode 3: Asynchronous reset (Control)</p>  <p>*Matrox Genesis Main Board with Grab Module **Matrox Digital Data Input Board</p> <ul style="list-style-type: none"> • 2029 × 2044 × 8 or 10-bit. • Dual channel RS-422 digital video. • Progressive scan. • Matrox Genesis receiving TTL external trigger. • Matrox Genesis sends EXPOSURE1 (EXPOSE) signal to camera to initiate exposure. • Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA @ 10 MHz/channel), and video signals. • DCF used: KOD42DAE.DCF (8-bit) • DCF used: K4210DAE.DCF (10-bit)
<p>Camera Interface Details</p>	<p>Mode 1: Pseudo-continuous mode</p> <ul style="list-style-type: none"> • Operating mode set to Continuous in the Remote Panel software. • Exposure time (in milliseconds) is adjustable and controlled through the Remote Panel software. <p>Mode 2: Asynchronous reset (Trigger)</p> <ul style="list-style-type: none"> • Operating mode set to Trigger in the Remote Panels. • Exposure time (in milliseconds) is adjustable and controlled through the Remote Panel software. • Once it has received the external trigger signal, the Matrox Genesis sends the EXPOSURE1 (EXPOSE) to the camera. The camera awaits the rising edge of the signal, at which point it initiates exposure. <p>Mode 3: Asynchronous reset (Control)</p> <ul style="list-style-type: none"> • Operating mode set to Control in the Remote Panel software. • Exposure time is adjustable and controlled through Matrox Intellicam, Genesis Native Library and Matrox Imaging Library (MIL). Consult the appropriate user guide for more information. • Once it has received the external trigger signal, Matrox Genesis sends the EXPOSURE1 (EXPOSE) to the camera. The camera awaits the rising edge of the signal, at which point it initiates exposure. The camera will expose for as long as the EXPOSURE1 (EXPOSE) signal is high.

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Cabling Requirements	Mode 1: Pseudo-continuous mode (8-bit)			
	<ul style="list-style-type: none"> • DBHD100-TO-OPEN cable and GEN/DIG/BRD/R/_ board required for digital data, synchronization and control signals. • Connections between the 68-pin row connector of the camera and the 100-pin connector of the GEN-DIG-BRD/R/_ are as follows: 			
	GEN-DIG-BRD/R/_ (100-pin connector)		ROPER SCIENTIFIC (KODAK) 4.2i (68-pin connector)	
	<i>Pin name</i>	<i>Pin no.</i>	<i>Pin name</i>	<i>Pin no.</i>
	DATA, INPUT, 7+	15 ←	MSB+	2
	DATA, INPUT, 7-	16 ←	MSB-	36
	DATA, INPUT, 6+	13 ←	MSB-1+	3
	DATA, INPUT, 6-	14 ←	MSB-1-	37
	DATA, INPUT, 5+	11 ←	MSB-2+	4
	DATA, INPUT, 5-	12 ←	MSB-2-	38
	DATA, INPUT, 4+	9 ←	MSB-3+	5
	DATA, INPUT, 4-	10 ←	MSB-3-	39
	DATA, INPUT, 3+	7 ←	MSB-4+	6
	DATA, INPUT, 3-	8 ←	MSB-4-	40
	DATA, INPUT, 2+	5 ←	MSB-5+	7
	DATA, INPUT, 2-	6 ←	MSB-5-	41
	DATA, INPUT, 1+	3 ←	MSB-6+	8
	DATA, INPUT, 1-	4 ←	MSB-6-	42
	DATA, INPUT, 0+	1 ←	MSB-7+	9
	DATA, INPUT, 0-	2 ←	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	1

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Cabling Requirements (continued)

Mode 1: Pseudo-continuous mode (10-bit)

- DBHD100-TO-OPEN cable and GEN/DIG/BRD/R/_ board required for digital data, synchronization and control signals.
- Connections between the 68-pin row connector of the camera and the 100-pin connector of the GEN-DIG-BRD/R/_ are as follows:

GEN-DIG-BRD/R/_ (100-pin connector)			ROPER SCIENTIFIC (KODAK) 4.2i (68-pin connector)		
<i>Pin name</i>	<i>Pin no.</i>		<i>Pin name</i>	<i>Pin no.</i>	
DATA, INPUT, 9+	19	←	MSB+	2	
DATA, INPUT, 9-	20	←	MSB-	36	
DATA, INPUT, 8+	17	←	MSB-1+	3	
DATA, INPUT, 8-	18	←	MSB-1-	37	
DATA, INPUT, 7+	15	←	MSB-2+	4	
DATA, INPUT, 7-	16	←	MSB-2-	38	
DATA, INPUT, 6+	13	←	MSB-3+	5	
DATA, INPUT, 6-	14	←	MSB-3-	39	
DATA, INPUT, 5+	11	←	MSB-4+	6	
DATA, INPUT, 5-	12	←	MSB-4-	40	
DATA, INPUT, 4+	9	←	MSB-5+	7	
DATA, INPUT, 4-	10	←	MSB-5-	41	
DATA, INPUT, 3+	7	←	MSB-6+	8	
DATA, INPUT, 3-	8	←	MSB-6-	42	
DATA, INPUT, 2+	5	←	MSB-7+	9	
DATA, INPUT, 2-	6	←	MSB-7-	43	
DATA, INPUT, 1+	3	←	MSB-8+	10	
DATA, INPUT, 1-	4	←	MSB-8-	44	
DATA, INPUT, 0+	1	←	MSB-9+	11	
DATA, INPUT, 0-	2	←	MSB-9-	45	
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	1	

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Cabling Requirements (continued)	Modes 2 and 3: Asynchronous reset (Trigger/Control)			
	<ul style="list-style-type: none">• DBHD100-TO-OPEN and IMG-7W2-TO-5BNC cables, and GEN/DIG/BRD/R/_ board required for external trigger, digital data, synchronization, and control signals.• TTL external trigger source should be connected to the TTL Trigger Input of the IMG-7W2-TO-5BNC cable.• Connections between the 68-pin row connector of the camera and the 100-pin connector of the GEN-DIG-BRD/R/_ are as in Mode 1: <i>Pseudo-Continuous</i>.• 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	
	Pin name	Pin no.		Pin name
	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: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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