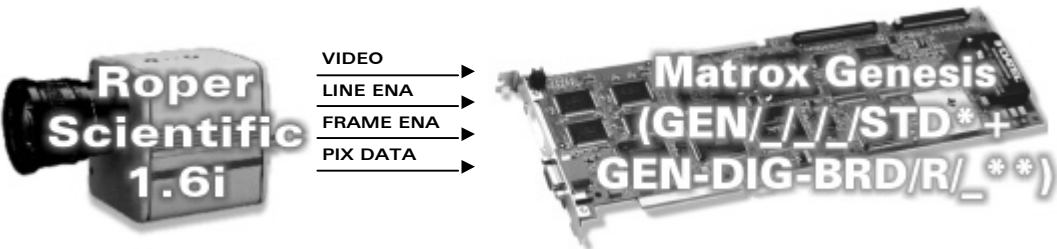
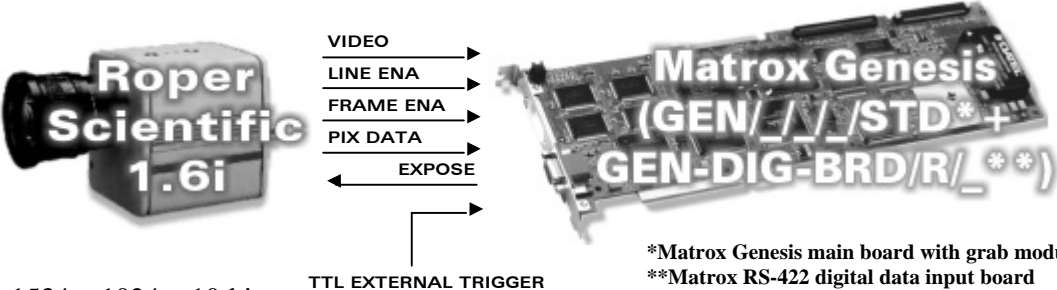


Application Note:

Interfacing non-standard cameras to Matrox Genesis

Roper Scientific MASD (Kodak) 1.6i

June 13, 2000

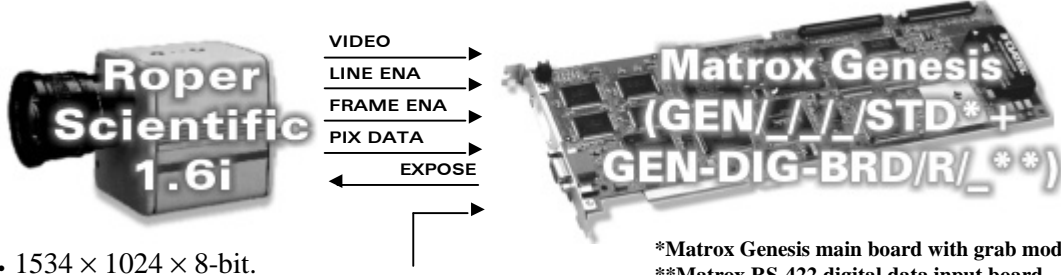
Camera Descriptions	<ul style="list-style-type: none"> • 1534 × 1024 × 10-bit @ 5 fps (maximum). • RS-422 digital video output. • Progressive scan. • External sync. • Internal or external exposure control.
Interface modes	<ul style="list-style-type: none"> • Pseudo-continuous, asynchronous reset (trigger, control)
Camera Interface Briefs	<p>Mode 1: Pseudo-continuous</p>  <ul style="list-style-type: none"> • 1534 × 1024 × 10-bit. • RS-422 digital video. • Progressive scan. • Continuous video. • Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA STRB @10 MHz) and video signals from camera. • DCF used: K16ID.DCF <p>Mode 2: Asynchronous reset (Trigger)</p>  <ul style="list-style-type: none"> • 1534 × 1024 × 10-bit • RS-422 digital video. • Progressive scan. • Matrox Genesis receiving TTL external trigger. • Matrox Genesis sending EXPOSURE1 (EXPOSE) signal to camera to initiate exposure. • Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA STRB @10 MHz) and video signals from camera. • DCF used: K16IDA.DCF <p><small>*Matrox Genesis main board with grab module **Matrox RS-422 digital data input board</small></p>

Application Note:

Interfacing non-standard cameras to Matrox Genesis

Roper Scientific MASD (Kodak) 1.6i

June 13, 2000

<p>Camera Interface Briefs (continued)</p>	<p>Mode 3: Asynchronous reset (Control)</p>  <ul style="list-style-type: none"> • 1534 × 1024 × 8-bit. • RS-422 digital video. • Progressive scan. • External exposure control with times starting at 1ms. • Matrox Genesis receiving TTL external trigger. • Matrox Genesis sending EXPOSURE1 (EXPOSE) signal to camera to initiate exposure. • Matrox Genesis receiving HSYNC (LINE ENABLE), VSYNC (FRAME ENABLE), PIXEL CLOCK (PIX DATA STRB @10 MHz) and video signals from camera. • DCF used: K16IAE.DCF <p><small>*Matrox Genesis main board with grab module **Matrox RS-422 digital data input board</small></p>
<p>Camera Interface Details</p>	<p>Mode 1: Pseudo-continuous</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 Panel software. • 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) signal 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 EXPOSURE1 (EXPOSE) signal 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.

Application Note:

Interfacing non-standard cameras to Matrox Genesis

Roper Scientific MASD (Kodak) 1.6i

June 13, 2000

Cabling Requirements	Mode 1: Pseudo-continuous			
	<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 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) 1.6i (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
	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 digital data, synchronization, and control signals. TTL external trigger source should be connected to the TTL trigger input of IMG-7W2-TO-5BNC cable. All other connections are as in Mode 1: <i>Pseudo-continuous</i>. 			

Application Note:

Interfacing non-standard cameras to Matrox Genesis

Roper Scientific MASD (Kodak) 1.6i

June 13, 2000

Cabling Requirements (continued)	Modes 2 and 3: Asynchronous reset (Trigger/Control)		
	<ul style="list-style-type: none"> 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.

Corporate headquarters: Offices:

Canada and U.S.A. Matrox Electronic Systems Ltd. 1055 St. Regis Blvd. Dorval, Quebec H9P 2T4 Canada Tel: (514) 685-2630 Fax: (514) 822-6273	Europe, Middle East & Africa Matrox VITE Limited Sefton Park Stoke Poges Buckinghamshire SL2 4JS U.K. Tel: 01753 665500 Fax: 01753 665599	France Matrox France SARL 2, rue de la Couture, Silic 225 94528 Rungis Cedex Tel: (0) 1 45-60-62-00 Fax: (0) 1 45-60-62-05	Germany Matrox Electronic Systems GmbH Inselkammerstr. 8 D-82008 Unterhaching Germany Tel: 089/614 4740 Fax: 089/614 9743	Asia Pacific Matrox Asia Ltd. Rm. 1901, 19/F, Workington Tower 78 Bonham Strand E. Sheung Wan Hong Kong Tel: 852.2877.5387 Fax: 852.2537.9530
--	--	---	---	--

