





# Application Note:

## Interfacing non-standard cameras to Matrox Genesis

JAI CV-M70

November 9, 1998

<b>Camera Descriptions</b>	<ul style="list-style-type: none"> <li>• 640 x 480 x 8-bit @ 30 fps.</li> <li>• Single channel analog video output.</li> <li>• Progressive scan.</li> <li>• External sync.</li> <li>• Internal exposure control.</li> <li>• Pixel clock: 12.637 MHz</li> </ul>
<b>Interface modes</b>	<ul style="list-style-type: none"> <li>• Continuous, asynchronous reset</li> </ul>
<b>Camera Interface Briefs</b>	<p><b>Mode 1: Continuous</b></p> <div data-bbox="406 714 665 882">  </div> <div data-bbox="682 735 828 777"> <p>VIDEO RGB →</p> </div> <div data-bbox="876 672 1445 924">  <p><b>Matrox Genesis (GEN/STD)</b></p> <p><small>*Matrox Genesis Main Board with Grab Module</small></p> </div> <ul style="list-style-type: none"> <li>• 640 x 480 x 8-bit @ 30 fps.</li> <li>• Analog RGB video output.</li> <li>• Progressive scan.</li> <li>• Matrox Genesis receiving RGB video signals from camera.</li> <li>• DCF used: <a href="#">CVM70AC.DCF</a></li> </ul> <p><b>Mode 2: Asynchronous Reset</b></p> <div data-bbox="422 1218 682 1386">  </div> <div data-bbox="682 1197 860 1365"> <p>VIDEO RGB →</p> <p>HD →</p> <p>VD →</p> <p>← TRIG INPUT</p> <p>← WEN</p> </div> <div data-bbox="649 1428 941 1459"> <p>TTL EXTERNAL TRIGGER</p> </div> <div data-bbox="893 1176 1477 1428">  <p><b>Matrox Genesis (GEN/CBL/ADAPTER)</b></p> <p><small>*Matrox Genesis Main Board with Grab Module</small>  <small>** Matrox Digital Cable Adapter Board</small></p> </div> <ul style="list-style-type: none"> <li>• 640 x 480 x 8-bit.</li> <li>• Analog RGB video output.</li> <li>• Progressive scan.</li> <li>• Matrox Genesis receiving TTL external trigger.</li> <li>• Matrox Genesis sending EXPOSURE1 (TRIGGER INPUT) and TRIGGER (WEN) signals to camera.</li> <li>• Matrox Genesis receiving HSYNC (HD), VSYNC (VD) and RGB video signals from camera.</li> <li>• DCF used: <a href="#">CVM70AT.DCF</a></li> </ul>

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Camera Interface Details	<p>Switch settings (SW1 on rear panel of camera) :</p> <p><b>Mode 1 : Continuous mode</b></p> <table><tr><th>OFF</th><th>ON</th><th></th></tr><tr><td>•</td><td></td><td>1 shutter data 2SB</td></tr><tr><td>•</td><td></td><td>2 shutter data 1SB</td></tr><tr><td>•</td><td></td><td>3 shutter data LSB</td></tr><tr><td></td><td>•</td><td>4 electronic shutter</td></tr><tr><td></td><td>•</td><td>5 scanning system</td></tr><tr><td>•</td><td></td><td>6 gamma correction</td></tr><tr><td>•</td><td></td><td>7 master gain</td></tr><tr><td>•</td><td></td><td>8 local/remote</td></tr></table> <p>Switches 4 and 5 set to ON, all others are set to OFF</p> <p><b>Mode 2 : Asynchronous reset mode</b></p> <table><tr><th>OFF</th><th>ON</th><th></th></tr><tr><td>•</td><td></td><td>1 shutter data 2SB</td></tr><tr><td>•</td><td></td><td>2 shutter data 1SB</td></tr><tr><td>•</td><td></td><td>3 shutter data LSB</td></tr><tr><td>•</td><td></td><td>4 electronic shutter</td></tr><tr><td></td><td>•</td><td>5 Scanning system</td></tr><tr><td>•</td><td></td><td>6 gamma correction</td></tr><tr><td>•</td><td></td><td>7 master gain</td></tr><tr><td>•</td><td></td><td>8 local/remote</td></tr></table> <p>Switch 5 set to ON, all others are set to OFF</p>	OFF	ON		•		1 shutter data 2SB	•		2 shutter data 1SB	•		3 shutter data LSB		•	4 electronic shutter		•	5 scanning system	•		6 gamma correction	•		7 master gain	•		8 local/remote	OFF	ON		•		1 shutter data 2SB	•		2 shutter data 1SB	•		3 shutter data LSB	•		4 electronic shutter		•	5 Scanning system	•		6 gamma correction	•		7 master gain	•		8 local/remote
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Cabling Requirements	<p><b>Mode 1: Continuous</b></p> <ul style="list-style-type: none"><li>• IMG-7W2-TO-5BNC cable required for video output of camera.</li><li>• Red BNC connected to pin #3 (9-pin D-SUB connector-Red Video Source), Green BNC connected to pin #4 (9-pin D-SUB connector-Green Video Source), Blue BNC connected to pin #5 (9-pin D-SUB connector-Blue Video Source) and Black BNC connected to pin #7 (9-pin D-SUB connector-Black Int. Sync Out).</li></ul> <p><b>Mode 2: Asynchronous Reset</b></p> <ul style="list-style-type: none"><li>• IMG-7W2-TO-5BNC and DBHD68-TO-OPEN cables required for video output of camera, and sync and control output.</li><li>• Red, Green, Blue and Black BNC connections as in Mode 1: <i>Continuous</i>.</li><li>• Connections between the 6-pin multi connector (RS-232C) of the camera and the 68-pin connector of the Matrox Genesis are as follows:</li></ul> <table><tr><td><b>JAI CV-M70</b> (6-pin multi connector)</td><td></td><td><b>GEN/_/_/STD (DBHD68-TO-OPEN)</b> (68-pin digital interface connector)</td></tr><tr><td><i>Pin name</i></td><td><i>Pin no.</i></td><td><i>Pin name</i></td><td><i>Pin no.</i></td></tr><tr><td>TRIGGER INPUT</td><td>05</td><td>EXPOSURE1, OUTPUT, TTL</td><td>24</td></tr><tr><td>WEN OUTPUT</td><td>06</td><td>TRIGGER, INPUT, TTL</td><td>67</td></tr></table>	<b>JAI CV-M70</b> (6-pin multi connector)		<b>GEN/_/_/STD (DBHD68-TO-OPEN)</b> (68-pin digital interface connector)	<i>Pin name</i>	<i>Pin no.</i>	<i>Pin name</i>	<i>Pin no.</i>	TRIGGER INPUT	05	EXPOSURE1, OUTPUT, TTL	24	WEN OUTPUT	06	TRIGGER, INPUT, TTL	67																																							
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<b>Cabling Requirements (continued)</b>	<ul style="list-style-type: none"> <li>Connections between the 12-pin multi connector (DC/Ext. Sync) of the camera and the 68-pin connector of the Matrox Genesis are as follows:</li> </ul>			
	<b>JAI CV-M70</b>		<b>GEN/_/_/_/STD (DBHD68-TO-OPEN)</b>	
	<b>(12-pin multi connector)</b>		<b>(44-pin digital interface connector)</b>	
	<i>Pin name</i>	<i>Pin no.</i>	<i>Pin name</i>	<i>Pin no.</i>
	HD	06	→ HSYNC, INPUT, TTL	34
	VD	07	← EXPOSURE2, OUTPUT, TTL	58

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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