

# Application Note:

## Interfacing non-standard cameras to Matrox Genesis

Hitachi Denshi KP-F100

October 5, 1998

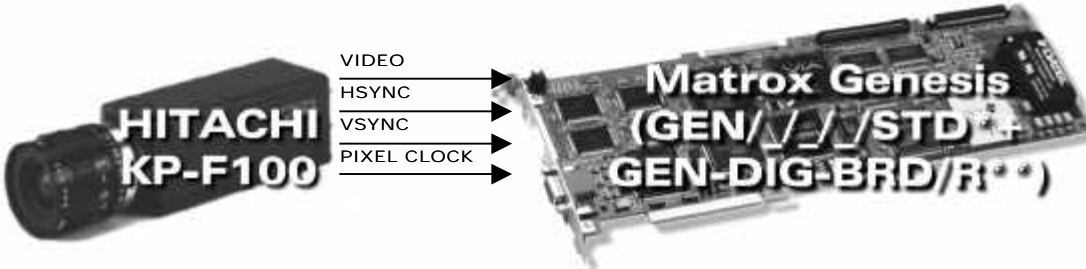
<b>Camera Descriptions</b>	<ul style="list-style-type: none"> <li>• 1300 x 1024 x 8-, 10-bit.</li> <li>• Single channel analog or RS-422 digital video output.</li> <li>• Progressive scan.</li> <li>• Pixel clock: 20.2 MHz</li> </ul>
<b>Interface modes</b>	<ul style="list-style-type: none"> <li>• Continuous mode (analog or RS-422 digital), Asynchronous reset (RS-422 digital)</li> </ul>
<b>Camera Interface Briefs</b>	<p><b>Mode 1: Continuous (analog)</b></p> <div data-bbox="410 625 1490 892"> <p style="text-align: right;">* Matrox Genesis Main Board with Grab Module</p> </div> <ul style="list-style-type: none"> <li>• 1300 x 1024 x 8-bit @ 12 fps</li> <li>• Analog video output.</li> <li>• Progressive scan.</li> <li>• Internal sync.</li> <li>• Continuous video.</li> <li>• DCF used: <a href="#">HTKP100A.DCF</a></li> </ul> <p><b>Mode 2: Continuous (RS-422 digital)</b></p> <div data-bbox="410 1245 1490 1512"> <p style="text-align: right;">* Matrox Genesis Main Board with Grab Module ** Matrox RS-422 Digital Data Input Board</p> </div> <ul style="list-style-type: none"> <li>• 1300 x 1024 x 10-bit @ 12 fps</li> <li>• Single channel RS-422 digital video output.</li> <li>• Progressive scan.</li> <li>• Internal sync.</li> <li>• Matrox Genesis receiving hsync, vsync, pixel clock and video signals from camera.</li> <li>• Pixel clock: 20.2 MHz</li> <li>• DCF used: <a href="#">HTKP100D.DCF</a></li> </ul>

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<p><b>Camera Interface Briefs (continued)</b></p>	<p><b>Mode 3: Asynchronous reset (RS-422 digital)</b></p>  <p>* Matrox Genesis Main Board with Grab Module  ** Matrox RS-422 Digital Data Input Board</p> <ul style="list-style-type: none"> <li>• 1300 x 1024 x 10-bit.</li> <li>• Single channel RS-422 digital video output.</li> <li>• Progressive scan.</li> <li>• Internal sync.</li> <li>• Matrox Genesis receiving RS-422 HSYNC, RS-422 VSYNC, RS-422 PIXEL CLOCK and video signals from camera.</li> <li>• Pixel clock: 20.2 MHz</li> <li>• DCF used: <a href="#">KPF100DA.DCF</a></li> </ul>
<p><b>Camera Interface Details</b></p>	<p><b>Mode 1-2: Continuous (analog and RS-422 digital)</b></p> <ul style="list-style-type: none"> <li>• <b>Switch settings:</b> The external switch settings located on the camera's rear are as follows: <ul style="list-style-type: none"> <li>▪ Frame on Demand set to <b>OFF</b></li> <li>▪ Mode and Shutter speed switches are selected to user desired settings. Refer to camera manual for more information.</li> </ul> </li> </ul> <p><b>Mode 3: Asynchronous reset (RS-422 digital)</b></p> <ul style="list-style-type: none"> <li>• <b>Switch settings:</b> The external switch settings located on the camera's rear are as follows: <ul style="list-style-type: none"> <li>▪ Frame on Demand set to <b>ON</b></li> <li>▪ Mode switch set to <b>1</b>.</li> <li>▪ Shutter speed switch set to user desired settings.</li> </ul> </li> </ul>

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<div>Camera Interface Details (continued)</div>	<div>Camera's Rear</div> <div><div>Shutter Speed Switches</div><div>Frame on Demand Mode Switch</div><div>Frame on Demand On/Off Switch</div></div>																																																																																
<div>Cabling Requirements</div>	<div>Mode 1: Continuous (analog)</div> <div><ul style="list-style-type: none"><li>• IMG-7W2-TO-1BNC cable required for video output of camera.</li></ul></div> <div>Mode 2, 3: Continuous and Asynchronous reset (RS-422 digital)</div> <div><ul style="list-style-type: none"><li>• IMG-7W2-TO-5BNC cable required for TTL external trigger source (Asynchronous reset mode only) and GEN/DIG/BRD/S required for digital data, synchronization and control signals in RS-422 format.</li><li>• TTL external trigger source should be connected to the TTL trigger input of the IMG-7W2-TO-5BNC cable</li><li>• Connections between the 26-pin connector of the camera and the 100-pin connector of GEN-DIG-BRD/S are as follows:</li></ul></div> <div><table><tr><th>Hitachi KP-F100 (26-pin connector)</th><th></th><th></th><th>GEN-DIG-BRD/S (100-pin connector)</th><th></th></tr><tr><th>Pin name</th><th>Pin no.</th><th></th><th>Pin name</th><th>Pin no.</th></tr><tr><td>D0</td><td>01</td><td>→</td><td>DATA, INPUT, 0+</td><td>01</td></tr><tr><td>D0B</td><td>02</td><td>→</td><td>DATA, INPUT, 0-</td><td>02</td></tr><tr><td>D1</td><td>03</td><td>→</td><td>DATA, INPUT, 1+</td><td>03</td></tr><tr><td>D1B</td><td>04</td><td>→</td><td>DATA, INPUT, 1-</td><td>04</td></tr><tr><td>D2</td><td>05</td><td>→</td><td>DATA, INPUT, 2+</td><td>05</td></tr><tr><td>D2B</td><td>06</td><td>→</td><td>DATA, INPUT, 2-</td><td>06</td></tr><tr><td>D3</td><td>07</td><td>→</td><td>DATA, INPUT, 3+</td><td>07</td></tr><tr><td>D3B</td><td>08</td><td>→</td><td>DATA, INPUT, 3-</td><td>08</td></tr><tr><td>D4</td><td>09</td><td>→</td><td>DATA, INPUT, 4+</td><td>09</td></tr><tr><td>D4B</td><td>10</td><td>→</td><td>DATA, INPUT, 4-</td><td>10</td></tr><tr><td>D5</td><td>11</td><td>→</td><td>DATA, INPUT, 5+</td><td>11</td></tr><tr><td>D5B</td><td>12</td><td>→</td><td>DATA, INPUT, 5-</td><td>12</td></tr><tr><td>D6</td><td>13</td><td>→</td><td>DATA, INPUT, 6+</td><td>13</td></tr><tr><td>D6B</td><td>14</td><td>→</td><td>DATA, INPUT, 6-</td><td>14</td></tr></table></div>	Hitachi KP-F100 (26-pin connector)			GEN-DIG-BRD/S (100-pin connector)		Pin name	Pin no.		Pin name	Pin no.	D0	01	→	DATA, INPUT, 0+	01	D0B	02	→	DATA, INPUT, 0-	02	D1	03	→	DATA, INPUT, 1+	03	D1B	04	→	DATA, INPUT, 1-	04	D2	05	→	DATA, INPUT, 2+	05	D2B	06	→	DATA, INPUT, 2-	06	D3	07	→	DATA, INPUT, 3+	07	D3B	08	→	DATA, INPUT, 3-	08	D4	09	→	DATA, INPUT, 4+	09	D4B	10	→	DATA, INPUT, 4-	10	D5	11	→	DATA, INPUT, 5+	11	D5B	12	→	DATA, INPUT, 5-	12	D6	13	→	DATA, INPUT, 6+	13	D6B	14	→	DATA, INPUT, 6-	14
Hitachi KP-F100 (26-pin connector)			GEN-DIG-BRD/S (100-pin connector)																																																																														
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Cabling Requirements	<b>Pin name</b>	<b>Pin no.</b>		<b>Pin name</b>	<b>Pin no.</b>	
	D7	15	→	DATA, INPUT, 7+	15	
	D7B	16	→	DATA, INPUT, 7-	16	
	D8	17	→	DATA, INPUT, 8+	17	
	D8B	18	→	DATA, INPUT, 8-	18	
	D9	19	→	DATA, INPUT, 9+	19	
	D9B	20	→	DATA, INPUT, 9-	20	
	HDH	23	→	HSYNC, INPUT, +	33	
	HDL	24	→	HSYNC, INPUT, -	34	
	VDH	21	→	VSYNC, INPUT, +	35	
	VDL	22	→	VSYNC, INPUT, -	36	
	CLKH	25	→	CLOCK, INPUT, +	39	
	CLKL	26	→	CLOCK, INPUT, -	40	
	<ul style="list-style-type: none"><li>• Connections between the 12-pin HIROSE connector of the camera and the 68-pin connector of GEN-DIG-BRD/S are as follows:</li></ul>					
	<b>Hitachi KP-F100</b> <b>(12-pin HIROSE connector)</b>			<b>GEN-DIG-BRD/S</b> <b>(68-pin connector)</b>		
<b>Pin name</b>	<b>Pin no.</b>		<b>Pin name</b>	<b>Pin no.</b>		
EXPOSURE OUTPUTA	07	←	TTL_EXPOSURE1	87		
EXPOSURE OUTPUTB	09	←	TTL_EXPOSURE2	88		
<ul style="list-style-type: none"><li>• Connections between the 12-pin HIROSE connector on the rear panel of the camera and the power supply are as follows:</li></ul>						
<b>Hitachi KP-F100</b> <b>(12-pin HIROSE connector)</b>			<b>PC POWER</b> <b>(4-pin connector)</b>			
<b>Pin no.</b>	<b>Pin name</b>		<b>Pin no.</b>	<b>Pin name</b>		
02	+12V		01	+12V		
11	+12V		01	+12V		
01	GND		02	GROUND		
08	GND		02	GROUND		
10	GND		02	GROUND		
12	GND		02	GROUND		

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: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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