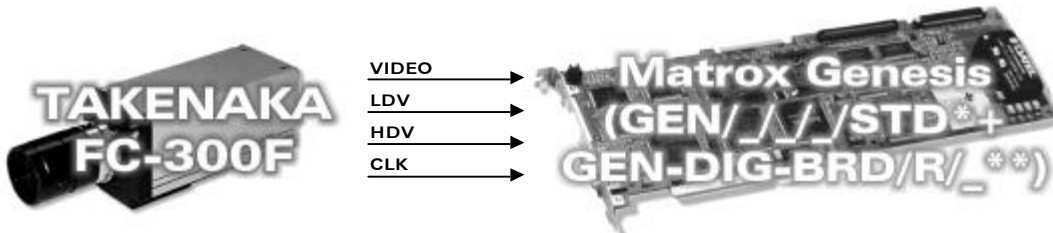
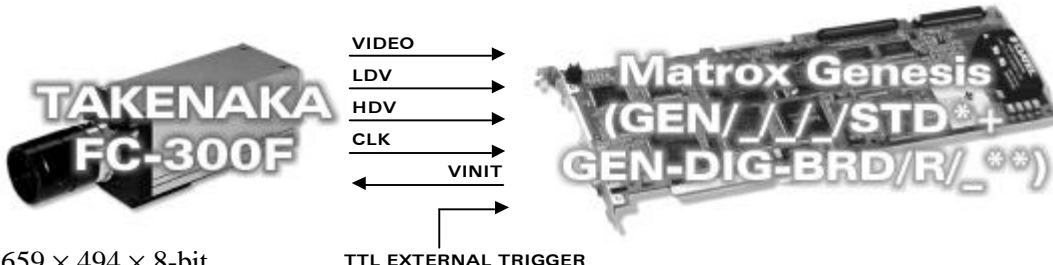


# Application Note:

## Interfacing non-standard cameras to Matrox Genesis

TAKENAKA FC-300F

March 28, 2000

<b>Camera Descriptions</b>	<ul style="list-style-type: none"> <li>• 659 × 494 × 8-bit @ 12 fps</li> <li>• Single tap analog or RS-422 digital video output.</li> <li>• Progressive scan</li> <li>• External sync.</li> <li>• Internal or external exposure control.</li> <li>• Pixel clock: 24.550 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>  <ul style="list-style-type: none"> <li>• 659 × 494 × 8-bit @ 12 fps</li> <li>• Single tap RS-422 digital video output.</li> <li>• Progressive scan</li> <li>• Continuous video.</li> <li>• Matrox Genesis receiving HSYNC (LDV), VSYNC (FDV), PIXEL CLOCK (CLK @ 24.550 MHz) and video signal from camera.</li> <li>• DCF used: <a href="#">GFC300FC.DCF</a></li> </ul> <p><b>Mode 2: Asynchronous reset</b></p>  <ul style="list-style-type: none"> <li>• 659 × 494 × 8-bit</li> <li>• Single tap RS-422 digital video output.</li> <li>• Progressive scan</li> <li>• Matrox Genesis receiving TTL external trigger.</li> <li>• Matrox Genesis sending EXPOSURE1 (VINIT) signal to camera; the EXPOSURE1 (VINIT) signal initiate exposure.</li> <li>• Matrox Genesis receiving HSYNC (LDV), VSYNC (FDV), PIXEL CLOCK (CLK @ 24.550 MHz) and video signal from camera.</li> <li>• DCF used: <a href="#">GFC300FA.DCF</a></li> </ul> <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

TAKENAKA FC-300F

March 28, 2000

<div>Camera Interface Details</div>	<div>Mode 1: Continuous</div> <div><ul style="list-style-type: none"><li>• <b>Frame rate:</b> Matrox Genesis receives the continuous video from the camera at 12 frames per second.</li><li>• <b>Exposure time:</b> Exposure time is inversely proportionate to the frame rate (no shutter) or determined by the shutter setting. Refer to the camera manual for more information.</li><li>• <b>Camera switch settings:</b> External switch settings are as follows:</li></ul></div> <div><table><tr><th>Switch</th><th>Setting</th></tr><tr><td>Shutter</td><td>0</td></tr><tr><td>Mode</td><td>5</td></tr><tr><td>Up/Down</td><td>UP</td></tr></table></div> <div>Mode 2: Asynchronous Reset</div> <div><ul style="list-style-type: none"><li>• Once it has received the external trigger signal, Matrox Genesis sends the EXPOSURE1 (VINIT) signal to the camera to initiate and control the exposure period.</li><li>• <b>Frame rate:</b> The frame rate is determined by the frequency of the external trigger signal.</li><li>• <b>Exposure time:</b> Exposure time is dependent on the shutter switch setting as well as the width of the EXPOSURE1 (VINIT) signal (active and inactive periods). The default exposure time for this DCF is equal to <b>200 ms</b>. In order to change the width and deployment time of EXPOSURE1 (VINIT) use the Exposure Settings menu tab in Matrox Intellicam. Consult the Matrox Intellicam User Guide for more information.</li><li>• <b>Camera switch settings:</b> External switch settings are as follows:</li></ul></div> <div><table><tr><th>Switch</th><th>Setting</th></tr><tr><td>Shutter</td><td>0</td></tr><tr><td>Mode</td><td>5</td></tr><tr><td>Up/Down</td><td>DOWN</td></tr></table></div>	Switch	Setting	Shutter	0	Mode	5	Up/Down	UP	Switch	Setting	Shutter	0	Mode	5	Up/Down	DOWN																																							
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<div>Cabling Requirements</div>	<div>Mode 1: Continuous</div> <div><ul style="list-style-type: none"><li>• DBHD100-TO-OPEN cable and GEN/DIG/BRD/R/_ board required for digital data, synchronization and control signals.</li><li>• Connections between the 36-pin connector (<b>D-SUB</b>) of the camera and the 100-pin connector of the Matrox Genesis are as follows:</li></ul></div> <div><table><tr><th colspan="2">TAKENAKA FC-300F (36-pin connector)</th><th></th><th colspan="2">GEN-DIG-BRD/R/_ (100-pin connector)</th></tr><tr><th>Pin name</th><th>Pin no.</th><th></th><th>Pin name</th><th>Pin no.</th></tr><tr><td>DO 0+</td><td>15</td><td>→</td><td>DATA, INPUT, 0+</td><td>01</td></tr><tr><td>DO 0-</td><td>16</td><td>→</td><td>DATA, INPUT, 0-</td><td>02</td></tr><tr><td>DO 1+</td><td>17</td><td>→</td><td>DATA, INPUT, 1+</td><td>03</td></tr><tr><td>DO 1-</td><td>18</td><td>→</td><td>DATA, INPUT, 1-</td><td>04</td></tr><tr><td>DO 2+</td><td>19</td><td>→</td><td>DATA, INPUT, 2+</td><td>05</td></tr><tr><td>DO 2-</td><td>20</td><td>→</td><td>DATA, INPUT, 2-</td><td>06</td></tr><tr><td>DO 3+</td><td>21</td><td>→</td><td>DATA, INPUT, 3+</td><td>07</td></tr><tr><td>DO 3-</td><td>22</td><td>→</td><td>DATA, INPUT, 3-</td><td>08</td></tr><tr><td colspan="5">continued</td></tr></table></div>	TAKENAKA FC-300F (36-pin connector)			GEN-DIG-BRD/R/_ (100-pin connector)		Pin name	Pin no.		Pin name	Pin no.	DO 0+	15	→	DATA, INPUT, 0+	01	DO 0-	16	→	DATA, INPUT, 0-	02	DO 1+	17	→	DATA, INPUT, 1+	03	DO 1-	18	→	DATA, INPUT, 1-	04	DO 2+	19	→	DATA, INPUT, 2+	05	DO 2-	20	→	DATA, INPUT, 2-	06	DO 3+	21	→	DATA, INPUT, 3+	07	DO 3-	22	→	DATA, INPUT, 3-	08	continued				
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# Application Note:

## Interfacing non-standard cameras to Matrox Genesis

TAKENAKA FC-300F

March 28, 2000

Cabling Requirements	TAKENAKA FC-300F (36-pin connector)		GEN-DIG-BRD/R/_ (100-pin connector)	
	<i>Pin name</i>	<i>Pin no.</i>	<i>Pin name</i>	<i>Pin no.</i>
	DO 4+	23	→ DATA, INPUT, 4+	09
	DO 4-	24	→ DATA, INPUT, 4-	10
	DO 5+	25	→ DATA, INPUT, 5+	11
	DO 5-	26	→ DATA, INPUT, 5-	12
	DO 6+	27	→ DATA, INPUT, 6+	13
	DO 6-	28	→ DATA, INPUT, 6-	14
	DO 7+	29	→ DATA, INPUT, 7+	15
	DO 7-	30	→ DATA, INPUT, 7-	16
	DO 8+	31	→ DATA, INPUT, 8+	17
	DO 8-	32	→ DATA, INPUT, 8-	18
	DO 9+	33	→ DATA, INPUT, 9+	19
	DO 9-	34	→ DATA, INPUT, 9-	20
	LDV+	03	→ HSYNC, INPUT, +	33
	LDV-	04	→ HSYNC, INPUT, -	34
	FDV+	05	→ VSYNC, INPUT, +	35
	FDV-	06	→ VSYNC, INPUT, -	36
	CLK+	01	→ CLOCK, INPUT, +	39
	CLK-	02	→ CLOCK, INPUT, -	40
	VINIT	14	← EXPOSURE1, OUTPUT, TTL	87*

\* This connection not required for this mode, however allows this cable to be used with all modes.

**Mode 2: Asynchronous Reset**

- DBHD100-TO-OPEN cable and GEN/DIG/BRD/R/\_ board required for digital data, synchronization and control signals.
- All connections between the 36-pin connector (**D-SUB**) of the camera and the 100-pin connector of the Matrox Genesis are as in *Mode 1: Continuous*

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 Electronic Systems, 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

