

Application Note:

Interfacing non-standard cameras to Matrox Genesis

TELI CS3720

February 14, 2000

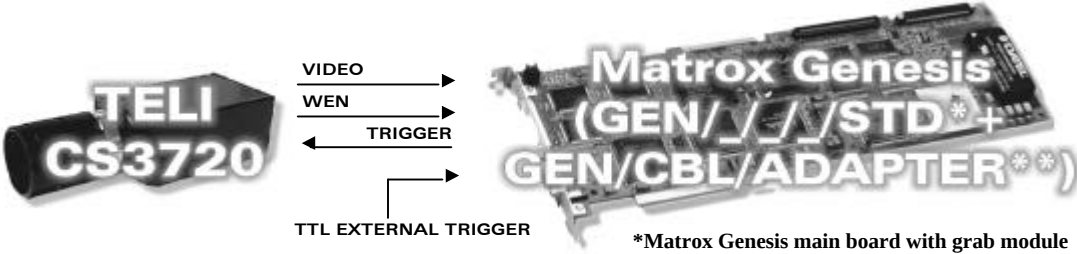
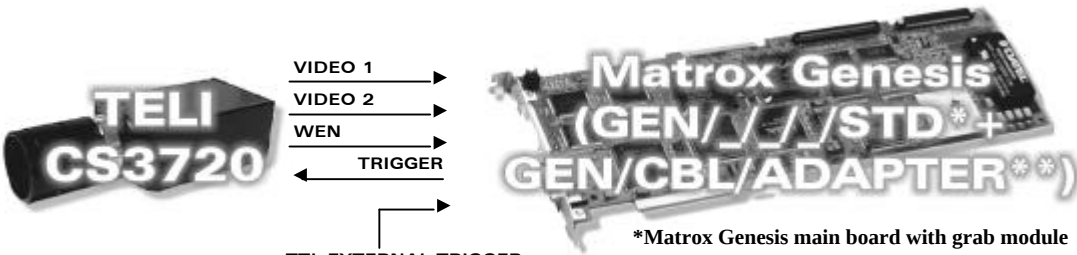
Camera Descriptions	• 658 x 494 x 8-bit. • Single or dual channel analog video output. • Interlaced or progressive scan. • Internal (composite) or external synchronization. • Internal or external exposure control. • Pixel clock: 24.54 MHz
Interface mode	• Continuous, asynchronous reset (I and N modes)
Camera Interface Briefs	Mode 1: Continuous (Genesis Slave - I mode)  VIDEO →  • 648 x 492 x 8-bit @ 60 fps. • Single channel analog video. • Interlaced scan. • Continuous video. • Matrox Genesis receiving video signal from camera. • DCF used: GCS372C1.DCF Mode 2: Continuous (Genesis Slave - N mode)  VIDEO 1 → VIDEO 2 →  • 648 x 480 x 8-bit @ 120 fps. • Dual channel analog video. • Progressive scan. • Continuous video. • Matrox Genesis receiving video signal from camera. • DCF used: GCS372C2.DCF *Matrox Genesis main board with grab module **Matrox digital cable adapter module

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Camera Interface Briefs (continued)	Mode 3 : Asynchronous Reset (I mode)  • 648 x 492 x 8-bit. • Single channel analog video. • Interlaced scan. • Matrox Genesis receiving TTL external trigger. • Matrox Genesis sending EXPOSURE2 (TRIGGER) signal to camera; the EXPOSURE2 (TRIGGER) signal initiate exposure. • Matrox Genesis receiving TRIGGER INPUT (WEN) and video signals from camera. • DCF used: GCS372AI.DCF Mode 4 : Asynchronous Reset (N mode)  • 648 x 480 8-bit. • Dual channel analog video. • Progressive scan. • Matrox Genesis receiving TTL external trigger. • Matrox Genesis sending EXPOSURE2 (TRIGGER) signal to camera; the EXPOSURE2 (TRIGGER) signal initiate exposure. • Matrox Genesis receiving TRIGGER INPUT (WEN) and video signals from camera. • DCF used: GCS372AN.DCF
Camera Interface Details	Modes 1 and 2: Continuous (I mode & N mode) • Frame rate: Matrox Genesis receives the continuous video from the camera with a frame rate of 60/120 frames per second. • Exposure time: 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. • Camera switch settings: Use default switch settings.

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Camera Interface Details (continued)	Mode 3 and 4: Asynchronous Reset (I mode & N mode) - Once it has received the external trigger signal, Matrox Genesis sends the EXPOSURE2 (TRIGGER) signal to the camera to initiate and controls the exposure period. Frame rate: The frame rate is determined by the frequency of the external trigger signal. Exposure time: Exposure time is dependent on the shutter switch setting as well as the width of the EXPOSURE2 (TRIGGER) signal (active and inactive periods). $T3 = [(shutter\ switch\ setting) - EXPOSURE2\ width + 1.2\ ms]$. The default exposure time for this DCF is equal to 1 ms. In order to change the width and deployment time of EXPOSURE2 (TRIGGER) use the Exposure Settings menu tab in Matrox Intellicam. Consult the Matrox Intellicam User Guide for more information. Camera switch settings: Use default switch settings.
Cabling Requirements	Mode 1: Continuous (Genesis Slave - I mode) - Digital Cable Adapter board and IMG-7W2-TO-5BNC cable required for video output of camera. - Video input of IMG-7W2-TO-5BNC cable should be connected to video out BNC connector of camera: Video Output 1 → Red Cable Mode 2: Continuous (Genesis Slave - N mode) - Digital Cable Adapter board and IMG-7W2-TO-5BNC cable required for video output of camera. - Video input of IMG-7W2-TO-5BNC cable should be connected to video out BNC connector of camera: Video Output 1 → Green Cable Video Output 2 → Red Cable Mode 3: Asynchronous Reset (I mode) - Digital Cable Adapter board and IMG-7W2-TO-5BNC cable required for video output of camera. - TTL external trigger source should be connected to TRIGGER INPUT of the IMG-7W2-TO-5BNC cable. continued

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Cabling Requirements (continued)

Mode 3: Asynchronous Reset (I mode)

- Video input of IMG-7W2-TO-5BNC cable should be connected to video out BNC connector of camera:

Video Output 1 → Red Cable

- The following connections should be made between the 12-pin connector of the camera and Matrox Genesis are as follows:

DIGITAL CABLE ADAPTER BOARD (68-pin connector)

<i>Pin name</i>	<i>Pin no.</i>
EXPOSURE2, OUTPUT, TTL	58
GROUND	25
TRIGGER, INPUT, TTL	67

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(12-pin connector)

<i>Pin name</i>	<i>Pin no.</i>
EXT. TRIGGER INPUT	11
GROUND	03
WEN	10

Mode 4: Asynchronous Reset (N mode)

- Digital Cable Adapter board and IMG-7W2-TO-5BNC cable required for video output of camera.
- TTL external trigger source should be connected to TRIGGER INPUT of the IMG-7W2-TO-5BNC cable.
- Video input of IMG-7W2-TO-5BNC cable should be connected to video out BNC connector of camera:

Video Output 1 → Green Cable

Video Output 2 → Red Cable

- All other connections are as in *Mode 3 Asynchronous Reset (I mode)*.

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 Imaging Applications at 514-822-6061 for assistance.

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