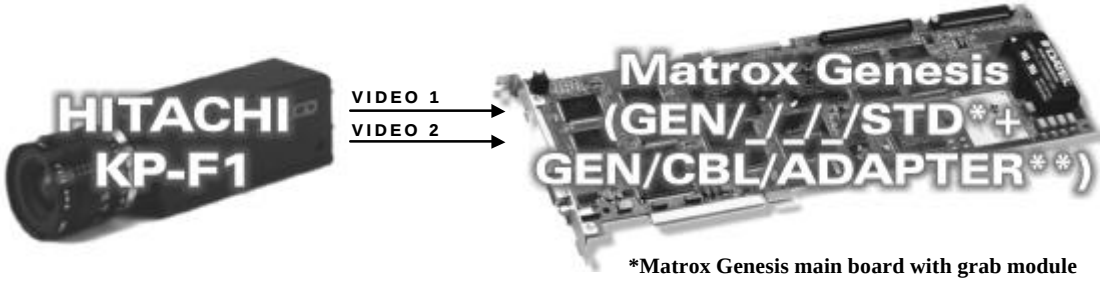
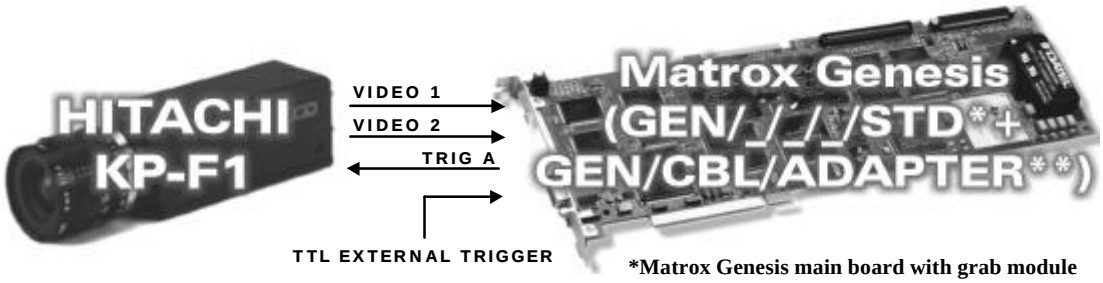
Application Note:
Interfacing non-standard cameras to Matrox Genesis

MATROX GENESIS

HITACHI KP-F1

December 18, 2000

Camera Descriptions	• 659 × 494 × 8-bit @ up to 60 fps. • Dual channel analog video output. • Progressive or interlaced scan. • External or internal exposure control. • External or internal sync. • 14.31818 MHz pixel clock rate.
Interface mode	• Continuous, asynchronous reset
Camera Interface Briefs	**Mode 1: Continuous**  ***Matrox Genesis main board with grab module** ****Matrox digital cable adapter board** • 644 × 482 × 8-bit @ 60 fps. • Dual channel analog video. • Progressive scan. • Continuous video. • Matrox Genesis receiving continuous video from camera. • DCF used: GKPF1C.DCF **Mode 2: Asynchronous Reset (Field-on-demand mode, single trigger)**  ***Matrox Genesis main board with grab module** ****Matrox digital cable adapter board** • 644 × 482 × 8-bit. • Dual channel analog video. • Interlaced scan. • Matrox Genesis receiving TTL external trigger signal. • Matrox Genesis sends EXPOSURE1 (TRIG A) signal to camera: the EXPOSURE1 (TRIG A) signal initiates exposure and controls exposure time. • Matrox Genesis receiving continuous video from camera. • DCF used: GKPF1A.DCF

Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Frame rate is fixed and inversely proportionate to the exposure time.
- **Exposure time:** Exposure time is adjustable (on camera) and inversely proportionate to the frame rate. Refer to the camera manual for more information.
- **Camera switch settings:** Refer to the camera manual for additional information. External and internal switch settings should be set as follows:

External Switch	*Setting*
Gain Select	F
Video Output Mode Select	2N
Shutter ON/OFF	OFF

Internal Switch	*Setting*
SW301	OFF
SW302	
1-5	OFF
6	ON
7-8	OFF
SW303	OFF

Mode 2: Asynchronous Reset (Field-on-demand mode, single trigger)

- Once it has received the external trigger signal, Matrox Genesis sends the EXPOSURE1 (TRIG A) signal to the camera with a width equal to the desired exposure.
- **Frame rate**: The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time**: Active period of EXPOSURE1 (TRIG A) signals is the exposure time. Default exposure time for this DCF is **13 ms**. The exposure time can be modified in the DCF using Matrox Intellicam, Genesis Native Library function **imCamControl()** or with the MIL digitizer control function **MdigControl()**. Refer to the appropriate manual or user guide for additional information.
- **Camera switch settings:** Refer to the camera manual for additional information. External and internal switch settings should be set as follows:

External Switch	*Setting*
Gain Select	F
Video Output Mode Select	2I
Shutter ON/OFF	OFF

Internal Switch	*Setting*
SW301	ON
SW302	
1-4	ON
5-8	OFF
SW303	OFF

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Cabling Requirements

Mode 1: Continuous

- IMG-7W2-TO-5BNC and GEN/CBL/ADAPTER board required for video, synchronization and control signals.
- Video inputs of IMG-7W2-TO-5BNC cable should be connected to video outs of camera (Video output 1→Green BNC, Video output 2→Red BNC).

Mode 2: Asynchronous Reset (Field-on-demand mode, single trigger)

- IMG-7W2-TO-5BNC and DBHD68-TO-OPEN cables, and GEN/CBL/ADAPTER board required for TTL external trigger and for video, synchronization and control signals.
- Video inputs of IMG-7W2-TO-5BNC cable should be connected to video outs of camera (Video output 1→Green BNC, Video output 2→Red BNC).
- TTL external trigger source should be connected to Gray BNC of IMG-7W2-TO-5BNC cable.
- Connection between the 12-pin connector of the camera and the 68-pin connector of the Matrox Genesis are as follows:

GEN/CBL/ADAPTER (68-pin connector)			**Hitachi KP-F1 (12-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
EXPOSURE1, OUTPUT, TTL	24	→	VD IN/TRIG A	07

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). 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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