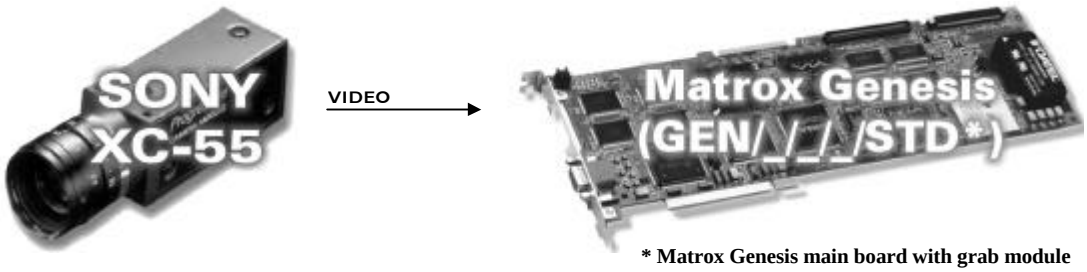
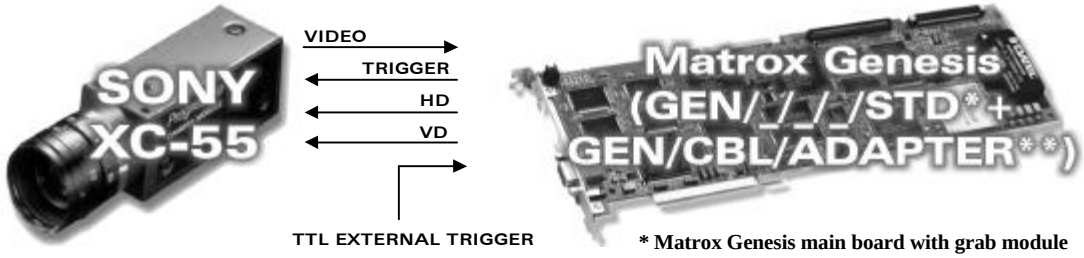
# Application Note:
## Interfacing non-standard cameras to Matrox Genesis

MATROX GENESIS

## SONY XC-55

**November 17, 2000**

| | |
|---|---|
| **Camera Descriptions** | • 646 × 485 × 8-bits.<br>• Single channel analog video output.<br>• Interlaced or Progressive scan.<br>• Internal (composite) sync.<br>• Pixel Clock rate: 12.27 MHz |
| **Interface modes** | • Continuous, Asynchronous reset (E-DONPISHA-II) |
| **Camera Interface Briefs** | **Mode 1: Continuous**<br>  <br>*** Matrox Genesis main board with grab module**<br>• 640 × 480 × 8-bits.<br>• Single channel analog video.<br>• Interlaced or Progressive scan.<br>• Matrox Genesis receiving continuous video signals from camera.<br>• DCF used: XC55C.DCF (interlaced scan)<br>• DCF used: XC55N.DCF (progressive scan)<br>**Mode 2: Asynchronous reset (E-DONPISHA-II)**<br>  <br>*** Matrox Genesis main board with grab module**<br>**** Matrox digital cable adapter module**<br>• 640 × 473 × 8-bits.<br>• Single channel analog video.<br>• Progressive scan.<br>• Matrox Genesis receiving TTL external trigger.<br>• Matrox Genesis sending EXPOSURE1 (TRIGGER), EXPOSURE2 (VD), HSYNC (HD) signals to camera; EXPOSURE1 (TRIGGER) signal sent to reset pixels and initiate exposure.<br>• Matrox Genesis receiving video signals from camera.<br>• DCF used: XC55NA.DCF |

**Camera Interface Details**

**Mode 1: Continuous**

- **Frame rate:** Matrox Genesis is in SLAVE mode and receives the continuous video from the camera. The frame rate is fixed and equal to 60 fps for interlaced scan or 30 fps for progressive scan.
- **Exposure time:** Exposure time is dependent on internal shutter settings on the camera. Refer to the camera manual for additional information.
- **Camera Switch settings:** External and internal settings are as follows:

| External | |
|---|---|
| ***Parameter*** | ***Setting*** |
| SIGNAL | * |
| GAIN | A/F/M |

.I (XC55C.DCF) or 1N (XC55N.DCF)

| Internal (SG257 board) | |
|---|---|
| ***Parameter*** | ***Setting*** |
| S1 | As desired |
| S2 | N |
| S3 | ON |
| S4 | EXT |
| S5 | + |
| S6 | ON |

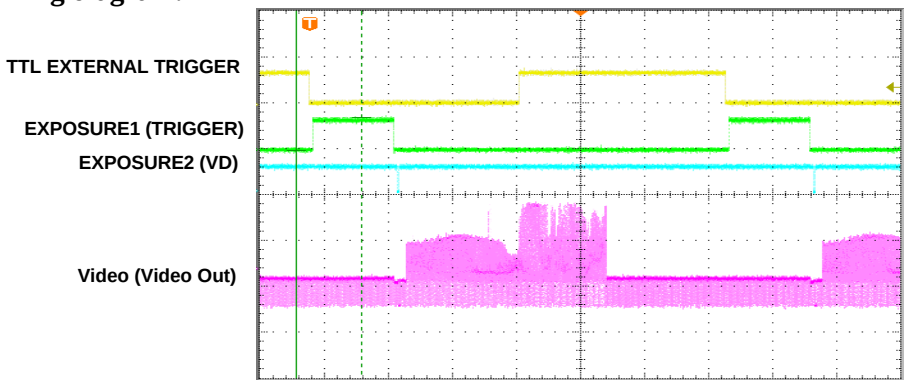
**Mode 2: Asynchronous reset (E-DONPISHA-II)**

- **Frame rate:** The frame rate is determined by the frequency of the external trigger. Once this external trigger is received, the Matrox Genesis generates an EXPOSURE1 (TRIGGER) pulse, which in turn initiates camera exposure.
- **Exposure time:** The exposure time is the EXPOSURE1 (TRIGGER) period plus a fixed internal camera delay **of 8 msec**. The exposure time can be modified in the DCF using Matrox Intellicam, with the GNL control function **imCamContoll()** or MIL digitizer control function **MdigControl()**. Refer to the appropriate manual or user guide for additional information
- **Maximum/minimum exposure time:** The maximum exposure time is **250 ms**. The minimum exposure time is **10 msec**.
- **Camera Switch settings:** External and internal settings are as follows:

| External | |
|---|---|
| ***Parameter*** | ***Setting*** |
| SIGNAL | 1N |
| GAIN | F/M |

| Internal (SG257 board) | |
|---|---|
| ***Parameter*** | ***Setting*** |
| S1 | As desired |
| S2 | E |
| S3 | ON |
| S4 | EXT |
| S5 | + |
| S6 | ON |

- **Timing diagram:**



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### Cabling Requirements

**Mode 1: Continuous**

- IMG-7W2-TO-5BNC cable required for video output of camera.
- Video input (RED BNC) of IMG-7W2-TO-5BNC cable should be connected to video out BNC connector of camera.

**Mode 2: Asynchronous reset (E-DONPISHA-II)**

- IMG-7W2-TO-5BNC and DBHD68-TO-OPEN (open ended) cables required for external trigger signal, synchronization, and video output of camera.
- External trigger source should be connected to the TTL trigger input of the IMG-7W2-TO-5BNC cable.
- Connections between the Matrox Genesis and the 12-pin connector of the camera are as follows:

| **GEN/CBL/ADAPTER (68-pin connector)** | | | **SONY XC-55 (12-pin connector)** | |
|---|---|---|---|---|
| **Pin name** | **Pin no.** | | **Pin name** | **Pin no.** |
| EXPOSURE1, OUTPUT, TTL | 24 | → | EXT. TRIGGER INPUT | 09 |
| EXPOSURE2, OUTPUT, TTL | 58 | → | VD | 07 |
| GROUND | 28 | -- | GROUND | 08 |
| HSYNC, OUTPUT, TTL | 62 | → | HD | 06 |

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.

**Corporate headquarters:**

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

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