

# Matrox Genesis

## Camera Interface Application Note

DALSA DS-41-04M15

November 26, 2002

Basics about the  
camera

### Camera Descriptions

- $2048 \times 2048 \times 12\text{-bit}^*$  @ 15 fps.
- Four channel LVDS digital video output.
- Progressive scan.
- Internal (composite) sync.
- Internal exposure control.
- 20 MHz pixel clock rate.
- \*Camera outputs 12-bit however only 8-bit was used for this interface

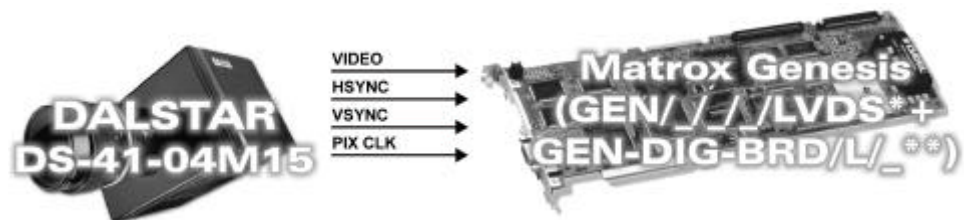
### Interface Modes

- Continuous (no binning, binning, AOI)

### Camera Interface Briefs

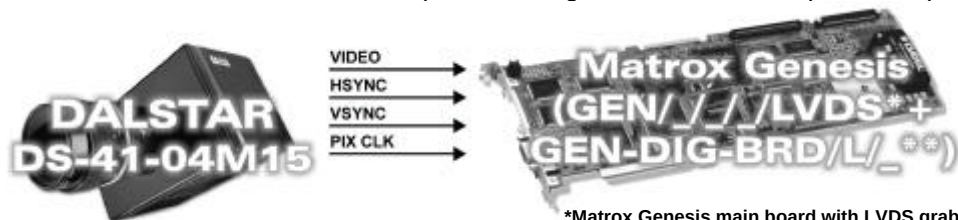
#### Mode 1: Continuous (no-Binning)

- $2048 \times 2048 \times 8\text{-bit}^*$  @ 15 fps.
- Four channel LVDS digital video.
- Progressive scan.
- Matrox Genesis receiving HSYNC, VSYNC, PIXEL CLOCK (@ 20 MHz) and video signals from camera.
- DCF: [SMDC1X1.DCF](#)



#### Mode 2: Continuous (Binning)

- Up to  $1024 \times 1024 \times 8\text{-bit}^*$ .
- Four channel LVDS digital video.
- Progressive scan.
- Matrox Genesis receiving HSYNC, VSYNC, PIXEL CLOCK (@ 10/5 MHz) and video signals from camera.
- DCF used: [SMDC2X2.DCF](#) ( $2 \times 2$  binning- $1024 \times 1024$  @ 28 fps, 10 MHz)
- DCF used: [SMDC4X4.DCF](#) ( $4 \times 4$  binning -  $512 \times 512$  @ 46 fps, 5 MHz)



\*Matrox Genesis main board with LVDS grab module

\*\*Matrox digital cable adapter board

Mode of operations as  
per Matrox Imaging (in  
parentheses as per  
camera manufacturer)

Basics about the  
interface modes

# Matrox Genesis

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DALSA DS-41-04M15

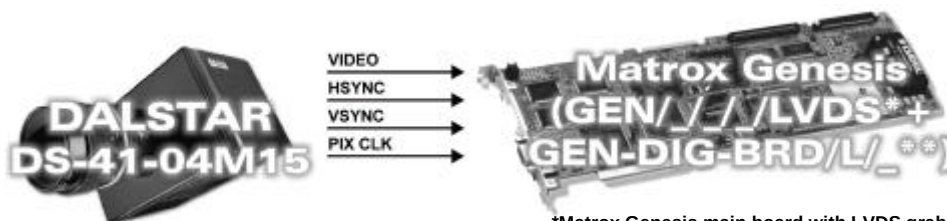
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Basics about the  
interface modes

### Camera Interface Briefs (continued)

#### Mode 3: Continuous (AOI - area of interest)

- $1024 \times 256 \times 8\text{-bit}^*$  @  $\approx 15$  fps.
- Four channel LVDS digital video.
- Progressive scan.
- Matrox Genesis receiving HSYNC, VSYNC, PIXEL CLOCK (@ 10 MHz) and video signals from camera.
- DCF used: [SMDCAOI.DCF](#)



\*Matrox Genesis main board with LVDS grab module  
\*\*Matrox digital cable adapter board

Specifics about the  
interface modes

### Camera Interface Details

#### Modes 1-3: Continuous

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 15 frames per second (28 and 48 fps with binning modes).
- **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 Control:** Camera control settings are made using DALSA's control software. Contact DALSA for more information.

### Cabling Requirements

#### Mode: Continuous

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **Connection:** Connections between the 15-pin quad row connectors (DATA1) of the camera and the 100-pin connector of the Matrox Genesis are as follows:

#### DALSTAR DS-41-04M15

(15-pin quad row connector- DATA 1)

Pin name

Pin no.

D1A4+

9

→

D1A4-

10

→

D1A5+

11

→

D1A5-

12

→

D1A6+

13

→

D1A6-

14

→

Continued...

#### Matrox Genesis

(100-pin connector)

Pin name

Pin no.

DATA, INPUT, 0+

1

DATA, INPUT, 0-

2

DATA, INPUT, 1+

3

DATA, INPUT, 1-

4

DATA, INPUT, 2+

5

DATA, INPUT, 2-

6

Cabling details for this  
interface mode

# Matrox Genesis

## Camera Interface Application Note

**DALSA DS-41-04M15**

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*Cabling details for this  
interface mode*

### Cabling Requirements (continued)

#### Mode: Continuous

##### DALSTAR DS-41-04M15

(15-pin quad row connector- DATA 1)

*Pin name*

*Pin no.*

##### Matrox Genesis

(100-pin connector)

*Pin name*

*Pin no.*

|           |    |   |                  |    |
|-----------|----|---|------------------|----|
| D1A7+     | 17 | → | DATA, INPUT, 3+  | 7  |
| D1A7-     | 18 | → | DATA, INPUT, 3-  | 8  |
| D1A8+     | 19 | → | DATA, INPUT, 4+  | 9  |
| D1A8-     | 20 | → | DATA, INPUT, 4-  | 10 |
| D1A9+     | 21 | → | DATA, INPUT, 5+  | 11 |
| D1A9-     | 22 | → | DATA, INPUT, 5-  | 12 |
| D1A10+    | 23 | → | DATA, INPUT, 6+  | 13 |
| D1A10-    | 24 | → | DATA, INPUT, 6-  | 14 |
| D1A11+    | 25 | → | DATA, INPUT, 7+  | 15 |
| D1A11-    | 26 | → | DATA, INPUT, 7-  | 16 |
| D1B4+     | 40 | → | DATA, INPUT, 8+  | 17 |
| D1B4-     | 39 | → | DATA, INPUT, 8-  | 18 |
| D1B5+     | 38 | → | DATA, INPUT, 9+  | 19 |
| D1B5-     | 37 | → | DATA, INPUT, 9-  | 20 |
| D1B6+     | 36 | → | DATA, INPUT, 10+ | 21 |
| D1B6-     | 35 | → | DATA, INPUT, 10- | 22 |
| D1B7+     | 34 | → | DATA, INPUT, 11+ | 23 |
| D1B7-     | 33 | → | DATA, INPUT, 11- | 24 |
| D1B8+     | 32 | → | DATA, INPUT, 12+ | 25 |
| D1B8-     | 31 | → | DATA, INPUT, 12- | 26 |
| D1B9+     | 52 | → | DATA, INPUT, 13+ | 27 |
| D1B9-     | 51 | → | DATA, INPUT, 13- | 28 |
| D1B10+    | 50 | → | DATA, INPUT, 14+ | 29 |
| D1B10-    | 49 | → | DATA, INPUT, 14- | 30 |
| D1B11+    | 48 | → | DATA, INPUT, 15+ | 31 |
| D1B11-    | 47 | → | DATA, INPUT, 15- | 32 |
| D1HSYNC+  | 58 | → | HSYNC, INPUT, +  | 33 |
| D1HSYNC - | 57 | → | HSYNC, INPUT, -  | 34 |
| D1VSYNC+  | 56 | → | VSYNC, INPUT, +  | 35 |
| D1VSYNC - | 55 | → | VSYNC, INPUT, -  | 36 |
| D1GND+    | 45 | → | GROUND           | 37 |
| D1GND-    | 46 | → | GROUND           | 38 |
| D1PCLK+   | 60 | → | CLOCK, INPUT, +  | 39 |
| D1PCLK -  | 59 | → | CLOCK, INPUT, -  | 40 |

##### DALSTAR DS-41-04M15

(15-pin quad row connector- DATA 2)

*Pin name*

*Pin no.*

##### Matrox Genesis

(100-pin connector)

*Pin name*

*Pin no.*

|       |    |   |                  |    |
|-------|----|---|------------------|----|
| D2A4+ | 9  | → | DATA, INPUT, 16+ | 51 |
| D2A4- | 10 | → | DATA, INPUT, 16- | 52 |
| D2A5+ | 11 | → | DATA, INPUT, 17+ | 53 |
| D2A5- | 12 | → | DATA, INPUT, 17- | 54 |

Continued...

# Matrox Genesis

## Camera Interface Application Note

### DALSA DS-41-04M15

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*Cabling details for this  
interface mode*

### Cabling Requirements (Continued)

#### Mode: Continuous

- **Connection:** Connections between the 15-pin quad row connectors (**DATA2**) of the camera and the 100-pin connector of the Matrox Genesis are as follows:

| DALSTAR DS-41-04M15<br>(15-pin quad row connector- DATA 2) |         |   | Matrox Genesis<br>(100-pin connector) |         |
|------------------------------------------------------------|---------|---|---------------------------------------|---------|
| Pin name                                                   | Pin no. |   | Pin name                              | Pin no. |
| D2A6+                                                      | 13      | → | DATA, INPUT, 18+                      | 55      |
| D2A6-                                                      | 14      | → | DATA, INPUT, 18-                      | 56      |
| D2A7+                                                      | 17      | → | DATA, INPUT, 19+                      | 57      |
| D2A7-                                                      | 18      | → | DATA, INPUT, 19-                      | 58      |
| D2A8+                                                      | 19      | → | DATA, INPUT, 20+                      | 59      |
| D2A8-                                                      | 20      | → | DATA, INPUT, 20-                      | 60      |
| D2A9+                                                      | 21      | → | DATA, INPUT, 21+                      | 61      |
| D2A9-                                                      | 22      | → | DATA, INPUT, 21-                      | 62      |
| D2A10+                                                     | 23      | → | DATA, INPUT, 22+                      | 63      |
| D2A10-                                                     | 24      | → | DATA, INPUT, 22-                      | 64      |
| D2A11+                                                     | 25      | → | DATA, INPUT, 23+                      | 65      |
| D2A11-                                                     | 26      | → | DATA, INPUT, 23-                      | 66      |
| D2B4+                                                      | 40      | → | DATA, INPUT, 24+                      | 67      |
| D2B4-                                                      | 39      | → | DATA, INPUT, 24-                      | 68      |
| D2B5+                                                      | 38      | → | DATA, INPUT, 25+                      | 69      |
| D2B5-                                                      | 37      | → | DATA, INPUT, 25-                      | 70      |
| D2B6+                                                      | 36      | → | DATA, INPUT, 26+                      | 71      |
| D2B6-                                                      | 35      | → | DATA, INPUT, 26-                      | 72      |
| D2B7+                                                      | 34      | → | DATA, INPUT, 27+                      | 73      |
| D2B7-                                                      | 33      | → | DATA, INPUT, 27-                      | 74      |
| D2B8+                                                      | 32      | → | DATA, INPUT, 28+                      | 75      |
| D2B8-                                                      | 31      | → | DATA, INPUT, 28-                      | 76      |
| D2B9+                                                      | 52      | → | DATA, INPUT, 29+                      | 77      |
| D2B9-                                                      | 51      | → | DATA, INPUT, 29-                      | 78      |
| D2B10+                                                     | 50      | → | DATA, INPUT, 30+                      | 79      |
| D2B10-                                                     | 49      | → | DATA, INPUT, 30-                      | 80      |
| D2B11+                                                     | 48      | → | DATA, INPUT, 31+                      | 81      |
| D2B11-                                                     | 47      | → | DATA, INPUT, 31-                      | 82      |

The DCF(s) mentioned in this application note can be found on the MIL, Native Library CD or our FTP site ([ftp.matrox.com](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.

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