

## DVG-5000 3D Digital Video Generator



### NEW Features

- \* 33 3D Signal Formats
- \* Advanced Motion Patterns
- \* Dual 10-bit / 8-bit Pattern Rendering
- \* Deep Color
- \* AVI Infoframe Control
- \* HDMI® Output

- \* Professional Display Calibration
- \* Video Processing Engineers and Display Designers
- \* Video Reviewers & Evaluation Engineers
- \* Manufacturing Test

The new DVG-5000 Motion Patterns reaffirm AccuPel's commitment to video processing engineers, product designers, and professional reviewers

**“Video without motion is simply a collection of still pictures. The ability to optimize video processing to display motion is the essence of video quality.”** Greg Rogers - AccuPel Video Engineer/Designer, Widescreen Review Technical Editor

For more than a decade AccuPel Video Generators have been a favorite of Professional Display Calibrators, Product Designers, and Home Theater Enthusiasts because of their unexcelled video signal quality and easy to use Front Panel, IR Remote Control, and Computer Interfaces.

### NEW 3D Option – 33 3D Signal Formats

The DVG-5000 provides all HDMI® 1.4a mandatory 50 Hz and 60 Hz 3D structure-formats, and 20 optional 3D structure-format combinations. All standard test patterns are available in all 33 3D structure-formats. Left eye & right eye blanking is provided, and the 3D Infoframe can be disabled to view the left and right eye test pattern frames without 3D display processing. A special interactive 3D Crosstalk pattern easily determines left-right and right-left crosstalk as an equivalent signal level or as display gamma-corrected percent luminance.

### NEW Dual-Native 10-bit / 8-bit Digital Video Resolution

The DVG-5000 brings AccuPel's Dual-Native 10-bit / 8-bit pattern rendering to digital video signals for the first time. For Deep Color RGB and YCbCr 4:4:4 signals, and YCbCr 4:2:2 20-bit signals, patterns are rendering using 10-bit accurate digital signal components. For older non-Deep Color and YCbCr 4:2:2 16-bit output standards that can't transport 10-bit digital component video, the Dual-Native pattern rendering produces separate 8-bit accurate digital component video to avoid rounding 10-bit values to 8-bit values which would produce LSB errors.

Unlike most generators that use pixel clock synthesizers, the DVG-5000 has three precision oscillators to provide individual low-jitter pixel clocks for standard-definition, 60 Hz-related high-definition, and 59.94 Hz-related high-definition video formats.

### NEW Motion Patterns Option - for Video Engineers & Professional Product Evaluators

Video without motion is simply a collection of still pictures. Static test patterns are essential for calibrating basic display parameters, but real-world video performance depends on how display technologies and video processing algorithms handle motion. That was always true when deinterlacing 480i, 576i, or 1080i interlaced video formats, or when scaling any progressive video format during motion. But it is now critically important and problematical with the introduction of smooth motion frame interpolation technologies that have become ubiquitous on flat panel displays and video projectors.

The Circular and Hyperbolic Zone Plates reveal the effects of linear and non-linear processing on spatial frequency response at user selectable motion rates and angles. The Horizontal and Vertical Wedge patterns can be used to easily measure the effect of motion on discernable display resolution. Cursors on the moving patterns can be used to make precise measurements of deinterlacing, scaling, and frame interpolation effects on horizontal, vertical, and radial spatial frequency response and resolution in lines per picture width or height, TVL, cycles per picture width or height, and percent of Nyquist frequency.

Moving Detail Discs with horizontal and vertical stripes, squares, and checker patterns show the effect of motion processing, deinterlacing, and detail enhancement algorithms on detail differentiation. Cosine Balls reveal motion induced contouring and other non-linear processing effects.

Motion patterns are available in all SD and HD formats, frame packing 3D formats, and RGB color. Interlaced formats can also be selected with 3-2 and 2-2 pull-down film cadences.

# DVG-5000 Features & Characteristics

## Video Formats (Standard)

|        |   |
|--------|---|
| 1080i  | 59.94, 60, 50   |
| 1080p  | 59.94, 60, 50<br>23.98, 24, 23.98sf, 24sf, 25<br>29.97, 30, 47.95, 48 |
| 720p   | 59.94, 60, 50   |
| 480i/p | 59.94   |
| 576i/p | 50  |

## 3D Structure-Formats (Option)

### Frame Packing

|       |                          |
|-------|--------------------------|
| 1080p | 23.98, 24, 25, 29.97, 30 |
| 720p  | 59.94, 60, 50            |

### Side-by-Side (Half)

|       |   |
|-------|---|
| 1080i | 59.94, 60, 50                             |
| 1080p | 59.94, 60, 50<br>23.98, 24, 25, 29.97, 30 |
| 720p  | 59.94, 60, 50                             |

### Top-and-Bottom

|       |   |
|-------|---|
| 1080p | 59.94, 60, 50<br>23.98, 24, 25, 29.97, 30 |
| 720p  | 59.94, 60, 50                             |

## Standard & 3D Output Signals

|       |              |
|-------|--------------|
| YCbCr | 4:2:2, 4:4:4 |
| RGB   | Video, PC*   |

Black-Reference White (0%-100%)  
16-235, 109% maximum signal levels  
\* Black-Reference White 0-255

## Standards

|       |                |
|-------|----------------|
| ITU-R | BT.709, BT.601 |
| SMPTE | 274M, 296M     |
| CEA   | 861E           |

## Native Video Pattern Rendering

|            |   |
|------------|---|
| Selectable | 10-bit or 8-bit for each<br>Y/Cb/Cr/R/G/B Component |
|------------|---|

## YCbCr 4:2:2 Signal Output

|            |   |
|------------|---|
| Selectable | 8-bit or 10-bit for each<br>Y/Cb/Cr Component |
|------------|---|

## Deep Color Signal Output

|            |                        |
|------------|------------------------|
| Selectable | 24-bit, 30-bit, 36-bit |
|------------|------------------------|

## User Interfaces

|            |   |
|------------|---|
| Standalone | Front Panel Control<br>OSD Menus<br>41-button IR Remote |
| Computer   | USB (PC/Mac/Linux)<br>ChromaPure™ Compatible            |

## Pattern & Feature Updates

|     |                     |
|-----|---------------------|
| USB | Windows or Mac OS X |
|-----|---------------------|

## 3D Signal Option

33 3D Structure-Formats  
All Standard Patterns in All 3D Formats  
Motion Option (Frame Packing only)  
Left Eye – Right Eye Blanking  
3D Inframe Control  
Interactive 3D Crosstalk Pattern

## Motion Patterns Option

70 Motion Patterns  
Circular Zone Plates  
Hyperbolic Zone Plates  
H & V Linear Frequency Sweeps  
H & V Resolution Wedges  
H & V Detail Discs Slices & Stripes  
Detail Discs Squares & Checkers  
Cosine Balls  
Selectable H & V Motion Rates  
Interlaced Cadences (1-1, 2-2, 3-2)  
Active Frequency/Resolution Cursors  
Horizontal, Vertical, Radial  
Selectable OSD Cursor Units  
Lines/PW, Lines/PH  
TVL  
Cycles/PW, Cycles/PH  
% Nyquist Frequency

## Additional Features

Color Gating - R, G, B, Y, Cb, Cr  
User Color, Grayscale, Checkerboards  
CIE xyY OSD Color Gamut Values  
AVI Inframe User Control  
YCbCr Signal Encoding Reversal  
YCbCr 4:2:2 Decimation Filter Control  
Edge Bandwidth Filter Control  
User-defined Pattern Lists  
OSD Menus – IR Remote Control

## Rear Panel Connectors

HDMI® (223 MHz max pixel rate)  
USB  
Power

## Power

+6 volts DC Regulated Input  
Deluxe AC Adapter (included)  
100-240 VAC 50/60 Hz  
Interchangeable Power Cords

## Size (Anodized Aluminum Case)

H x W x D 1.85" x 6.5" x 4.35" w/feet  
Weight 15 oz.

## Accessories (Included)

**Standard Version**  
AC Power Adapter  
Custom IR Remote Control  
**Deluxe Version with 3D Option**  
AC Power Adapter  
Custom IR Remote Control  
Hard-shell Carrying Case  
USB Cable  
HDMI Cable

## Patterns (Standard)

### Color 75 Group

75% Color Bars, Tri-Split Color Bars  
75% Color Windows –  
Red, Green, Blue, Yellow, Cyan,  
Magenta, Gray  
75% Color Fields –  
Red, Green, Blue, Yellow, Cyan,  
Magenta, Gray  
User-defined Color Window  
User-defined Color Field

### Color 100 Group

100% Color Bars, Tri-Split Color Bars  
100% Color Windows –  
Red, Green, Blue, Yellow, Cyan,  
Magenta, Gray  
100% Color Fields –  
Red, Green, Blue, Yellow, Cyan,  
Magenta, Gray  
User-defined Color Window  
User-defined Color Field

### Special Group

Overscan, Inverse Overscan,  
Crosshatch, Inverse Crosshatch,  
Needle Pulses, Color Pixel Multiburst,  
Luma Pixel Multiburst, Crosshair,  
Sharpness, 100% Checkerboard,  
100% Inverse Checkerboard,  
User-defined Checkerboard,  
User-defined Inverse Checkerboard,  
Linearity Ramps (8-bit & 10-bit)

### PLUGE Group

0% APL, 25% APL, 50% APL with  
98%/102% PLUGE  
25%, 50%, 75%, 100% Window,  
100% Window with 98%/100% PLUGE  
50%/100% Window with PLUGE  
Precision 11-21d PLUGE

### Gray Scale Group

10-Step Vertical & Split-V Grayscale  
1%-10% in 1% steps  
10-100% in 10% steps  
100%-109% in 0.9% steps  
10-Step Horizontal Grayscale  
1%-10% in 1% steps  
10-100% in 10% steps  
100%-109% in 0.9% steps  
Windows with PLUGE  
1%-10% in 1% steps  
10-100% in 10% steps  
100%-109% in 0.9% steps  
User-defined Grayscale Window

### Gray Field Group

Fields 0%, 25%, 50%, 75%, 100%  
Fields 10% – 100% in 10% steps  
User-defined Gray Field