Datasheet

# GV Director

## Nonlinear Live Production Center

GV Director from Grass Valley, a Belden Brand, is an integrated nonlinear production platform that combines the functionality of a switcher, video server, graphics generator and multiviewer in a simple, powerful and creative workspace.

GV Director provides a highly intuitive and efficient software-based solution that enables users of all experience levels to create and manage sophisticated live productions in a parallel, nonlinear manner. An easy-to-use software application provides the means to combine live switching, effects and graphics in one simple platform and workflow.

An optimized and compact 4 RU server platform incorporates multiple video inputs and outputs along with audio, graphics processing, multiviewer monitoring and IT connectivity. This is a purpose-built device with robust design for field production reliability, along with simple installation and setup.

The elegant control console is designed as one element of the user interface for fast execution of the most common operations. To assist the user in performing the most frequent and repetitive operations, the Smart Surface Panel includes assignable buttons, an integrated touchscreen and a lever arm (T-bar) for manual transitions.

## Advanced Live Production Tools

GV Director includes an effective and efficient set of tools that combines video mixing with transitions, layered effects, graphics and playback of packaged content for users to quickly and easily create sophisticated live productions. Using GV Director, users can support not only auxiliary productions such as sub-switching or regionalized content for large and complex events, but also cover the needs of smaller live productions in areas such as stadiums, education, corporate, house of worship and government.

An entire production containing complex graphics and effect elements can be created offline or online via a Mac or PC. The production elements are packaged and saved for later use or quickly published for immediate use at a live event—saving time and resources. With the advanced graphics and transitions authoring tool, users create effects and transitions from imported graphic elements with the ability to import from an effects library and utilize a key frame editor. With this sophisticated effects builder, the operator is able to easily build an entire scene by selecting the background, graphics and transitions — all with real-time offline preview.

The GV Director application is integrated with GV STRATUS nonlinear production tools to extend its production capabilities. This gives directors an additional live surface to support a new collaborative style of live production. GV Director brings true file-based production to live events and when used together with GV STRATUS, users can add ingest control, advanced logging, content management, editor integration and routing switcher control.

## Creative User Experience

GV Director features intuitive, simple and creative workspaces for users to improve the quality of your live productions. GV Director is purposely designed to appeal to a greater range of users who may not be technicians or traditional switcher operators, but who understand the nuances of a particular event. These users can easily tap into their creative abilities to enhance a production by offering a wider variety of graphics and effects than with conventional interfaces.

The system can be operated with a touchscreen panel hosting an efficient user interface and keyboard, as part of a dedicated control panel with the touchscreen, lighted buttons and T-bar giving users maximum feedback and flexibility interacting with the system.


In addition to the traditional program output, the independent Stage (preview) output can be used as a traditional preview or a live composite stage to preview an entire sequence of graphics, effects, transitions or parameters. The enhanced Stage capability lets the operator check effects, graphics and transitions for correct content and timing before taking to air on the program output.

## Advantages

Most live production solutions require dedicated technicians who have spent extensive time training to master the operation of a system. GV Director provides a new user experience through touchscreen interfaces, keyboard, mouse, assignable colored buttons and OLED displays allowing users to focus on creativity.

As a nonlinear live production system, GV Director is purposely designed for non-technical users, empowering the creative abilities of the user to enhance each production. With the intuitive user interface, one person has the ability to control an entire show. They can engage all production elements such as graphics, transitions, clips and stills with a tap of a finger through the touchscreen user interface. The use of this type of interface lowers the possibility of human error due to poor integration of functions and miscommunications.

An integrated package provides for simple deployment and installation consisting of a compact 4 RU server platform, a specialized control panel and optional DVI monitoring. All components, including graphics/transition authoring software, multiviewer and I/Os are included. Multiple tools are integrated in one user interface: switcher, graphics, effects and video clip playback for quick and consistent results.

## KEY FEATURES

- 8 HD/SD inputs and 4 HD/SD outputs (1x Program, 1x Stage and 2x Auxiliary), each with up to 16 tracks of embedded audio
- 2 analog audio inputs and 4 analog audio outputs
- Multicodec video support: MPEG & DV
- Standard media file import: MXF & MOV
- DVI output supporting optional touchscreen monitor interface
- Supported graphics formats: Targa (TGA) type 2 (uncompressed RGB) in 24-bit RGB or 32-bit RGBA formats (top/bottom-first bit supported) and BMP in 2 4-bit uncompressed RGB
- Brand new and revolutionary nonlinear live production workflow
- Small form-factor, fully integrated solution including:
  - Switcher capability supporting 2D and 3D wipes as well as chromakey
  - Real-time graphics engine
  - Clip store/playback
  - Multiviewer
- Empowers creative processes before and during live productions
- Ease of operation — emphasis on creativity not technical knowledge
- Create Once and Publish Everywhere (COPE): the complete look and style of a production can be created offline — with full preview — via the authoring tool (Mac or PC) and published to multiple live locations

GV Director instantly offers complete accessibility to all production processes and elements. Users can switch between eight live sources through a multiviewer interface and freely add multiple layers of clips, stills, graphics and transitions with no need to pre-load. Content can also be recorded and played back. The specialized Stage (preview) mode permits users to instantly look ahead at an entire series of production elements composited for quick review and modification.

Also unique to GV Director is a comprehensive authoring environment for the creation and layout of graphics, effects and transitions for an entire production. The authoring software runs entirely offline on a Mac or PC so the production elements can be planned and laid out prior to an event. In traditional production, the graphics could be prepared offline, but the sequences would have to be uploaded to the switcher, and then adjustments would have to be made and the graphics configured for use with the panel. This is a complex procedure, has resource limitations, and takes time to do. GV Director allows for 99 percent of the production to be prepared ahead of time within the authoring tool, and the show elements: graphics, transitions and effects all uploaded to be immediately accessible and usable. It is a one step process, and there are no secondary procedures. The production can be created in advance on the road, or even outsourced to a designer to build out anywhere in the world and uploaded remotely. The authoring software enables layering, keyframe animations, import of 2D and 3D graphics elements, WYSIWYG preview and comes with pre-built templates for easy re-use.

GV Director is an extensible solution. It leverages optimized IT technologies and application frameworks to interconnect multiple types of systems, and can become the basis for future applications. Through integration with GV STRATUS nonlinear production tools, GV Director can interconnect to routing switchers, servers and editors.

## SPECIFICATIONS

### Video Standards

**HD mode:** 720p50/59.94, 1080i50/59.94

**SD mode:** 525i59.94, 625i50

### Weight and Dimensions

**Panel:**

- Weight: 6.12 kg (13.5 lbs.)
- Length: 61.06 cm (24.04 in.)
- Width: 28.44 cm (11.2 in.)
- Height: 9.81 cm (3.86 in.)

**Server:**

- Weight: 24.7 kg (54.5 lbs.)
- Length: 48.26 cm (19 in.)
- Width: 58.37 cm (22.98 in.)
- Height: 17.55 cm (6.91 in.)

### Serial Digital Video Inputs

**Number of inputs:** 8

**HD video formats:** SMPTE 292M-1998

**SD video formats:** SMPTE 259M-1997, ITU-R BT.656

**Connectors:** 75Ω BNC

**Nominal amplitude:** 800 mVp-p

**Input impedance:** 75Ω

**Embedded audio:**

- Channels: 16 embedded audio tracks per SDI input
- Sampling rate: Max. 48 kHz
- Quantization: 24-bit

**Max cable length (typical):**

- HD video: 200m/656 ft. (using Belden 1694A type cable)
- SD video: 350m/1,148 ft. (using Belden 1694A type cable)

### Serial Digital Video Outputs

**Number of outputs:** 4

- 1x Program
- 1x Stage
- 2x Auxiliary

**HD video formats:** SMPTE 292M-1998

**SD video formats:** SMPTE 259M-1997, ITU-R BT.656

**Connectors:** 75Ω BNC

**Nominal amplitude:** 800 mVp-p

**Timing jitter:**

- HD video formats: 1.0 UI
- SD video formats: 0.2 UI

**Alignment jitter:**

- HD video formats: 0.2 UI
- SD video formats: 0.2 UI

**Output impedance**: 75Ω

**Embedded audio:**

- Channels: 16 embedded audio tracks in the program output and the stage output
- Sampling rate: Max. 192 kHz
- Quantization: 24-bit

### HDMI Inputs*

**Number of inputs:** 2 (each HDMI input reduces the SDI input by one)

**Connector:** HDMI Type A receptacle

**Video formats:** Resolution max. 1920x1080@60 Hz

**Data formats:** 24 bits per pixel. RGB 4:4:4, YCrCb 4:4:4, or YCrCb 4:2:2

### Analog Reference Input

**Connector:** Dual BNC loop-through

**Video standard:** Analog blackburst & tri-level sync

**Impedance:** 75Ω external termination

### Analog Audio Inputs

**Number of inputs:** 2

**Connector:** 3-pin female XLR

**Sampling rate:** Max. 48 kHz

**Quantization:** 24-bit

**Nominal level:** +4 dBu

**Input impedance:** Nominally 9.44 kΩ

### Analog Audio Outputs

**Number of outputs:** 4

**Connector:** 3-pin male XLR

### GPIO (12 in/12 out)

**Connector:** 25-pin female D-Sub

**Input impedance:** 4 kΩ

**Input levels:** 5V

**Output:** Open collector, 250 mA, 30V max.

### GPO (Tally)

**Connector:** 25-pin female D-Sub

**Output:** Open collector, 250 mA, 30V max.

### LTC Input

**Connector:** 3-pin Female XLR

**Standard:** SMPTE 12M

**Input impedance:** 200 kΩ

### Communications

**Connections**:

- Panel to video frame: LAN cable 100m (328 ft.) max. length
- Multiviewer touchscreen to frame: USB & DVI

### Power

**Video processing frame:**

- Line voltage: 100V-240 VAC ±10% power factor corrected
- Automatic line-voltage sensing
- Line frequency: 50/60 Hz ±5%
- Power consumption: typical 300W, max. 550W

**Control panel:**

- Line voltage: 100V-240 VAC ±10% power factor corrected
- Automatic line-voltage sensing
- Line frequency: 50/60 Hz ±5%
- Power consumption: typical 35W, max. 90W

### Environmental Conditions

**Storage temperature:** -20 to 70ºC (-4 to 158ºF)

**Operating temperature:** 0 to 40ºC (32 to 104ºF)

**Relative humidity:** 0-95% (non-condensing)

**Electromagnetic environment:** E4 (according to EN55103-1, -2)

### Video Record Format

MPEG-2

### File Wrappers

- MXF (OP1a)
- MOV

* Please refer to product documentation for details of supported formats.

## GV Director 1.1 Video Codecs

| Format | Codec | Bit rate (Mb/s) | Supported wrappers |
|---|---|---|---|
| SMPTE D10 30 / IMX 30 | SMPTE D10 (MPEG-2 4:2:2P@ML) | 30 | MOV 5, MXF 4 |
| SMPTE D10 40 / IMX 40 | SMPTE D10 (MPEG-2 4:2:2P@ML) | 40 | MOV 5, MXF 4 |
| SMPTE D10 50 / IMX 50 | SMPTE D10 (MPEG-2 4:2:2P@ML) | 50 | MOV 5, MXF 4 |
| DV25 | DV25 | 25 | MOV 5, MXF 4, GXF, LXF |
| DVCAM | DV25 | 25 | MOV 5, MXF 4, GXF, LXF |
| DVCPRO25 | DVCPRO25 | 25 | MOV 5, MXF 4, GXF, LXF |
| DVCPRO50 | DVCPRO50 | 50 | MOV 5, MXF 4, GXF, LXF |
| DVCPROHD | DVCPROHD | 115 | MOV 5, MXF 4, GXF, LXF |
| XDCAM HD (LP, SP, HQ) | MPEG HD (MPEG-2 MP@HL) | 18, 25, 35 | MOV 5, MXF 4 |
| XDCAM HD422 | MPEG HD422 (MPEG-2 4:2:2P@HL) | 50 | MOV 5, MXF 4 |
| XDCAM EX SP | MPEG HD (MPEG-2 MP@HL-1440) | 25 | MOV 5, MXF 4 |
| XDCAM EX HQ | MPEG HD (MPEG-2 MP@HL) | 35 | MOV 7, MXF 4 |
| MPEG-2 4:2:0 SD 1 | MPEG-2 MP@ML | Max 15 | MOV 5, MPG 3, MXF 4, GXF, LXF |
| MPEG-2 4:2:2 SD 1 | MPEG-2 4:2:2P@ML | Max 50 | MOV 5, MPG 3, MXF 4, GXF, LXF |
| MPEG-2 4:2:0 HD 1 | MPEG-2 MP@HL | Max 100 | MOV 5, MPG 3, MXF 4, GXF, LXF |
| MPEG-2 4:2:2 HD 1 | MPEG-2 4:2:2P@HL | Max 100 | MOV 5, MPG 5, MXF 4, GXF, LXF |
| AVC-Intra 50 | H.264 (MPEG-4 AVC Hi10-Intra-P@L4) | 50 | MXF 4, GXF |
| AVC-Intra 100 | H.264 (MPEG-4 AVC Hi4:2:2-Intra-P@L4.1) | 100 | MXF 4, GXF |
| H.264/AVC 2 | H.264 (MPEG-4 AVC HiP@L4.1) | Max 50 | MOV 5, MXF 4 |
| Apple ProRes 4:2:2 LT | Apple ProRes 4:2:2 LT | Max 100 | MOV 5 |

1) Both I-Frame only and Long GOP formats are supported.

2) H.264/AVC format: 4:0:0 (monochrome) is not supported.

3) Supported are MPEG-2 Transport Stream and MPEG-2 Program Stream.

4) Only Operational Pattern (OP)1a is supported. A maximum number of 36 embedded streams are supported. Frame-accurate seeking requires availability of a Random Access Pack (RIP) for MXF files encoded with variable frame size (VBE).

5) Both self-contained MOV files (internal essences) and MOV files with external essences are supported.

## Audio Formats

| Format | Bit depth | Sample rate (kHz) |
|---|---|---|
| BWF or WAV | 16- or 24-bit LPCM | 48 |
| MPEG-1 Layer 2 / MP2 | 16-bit | 48 |

Note:

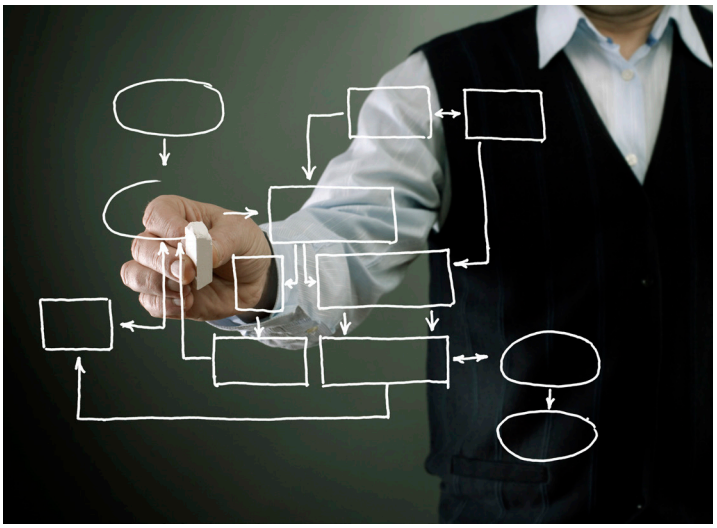
GV Director supports the BBC Audio Description format (voiceovers for the visually impaired) in separate WAV files and video files with embedded LPCM audio.

## Global Services

The benefits of GV Director are achieved through the design and implementation of an intuitive and efficient software-based solution. Its integrated format delivers a simple workspace that is easy to install and set up. Users gain the ability to focus on creativity rather than the system's technology. Global Services provides the expertise and logistics to help users of all experience levels to create and manage live productions in an efficient and effective manner.

### GLOBAL SERVICES PROVIDES:

- **Self Help —** Mission-critical production requires quick access to help and to instantaneous answers. Operational and technical self-help is extremely important where budgets do not allow for additional support staff. Users can rely on the GV Director knowledge base to augment their own resources. This access is an integral component of owning and utilizing GV Director.
- **Training —** Operational and technical training set the foundation for success. GV Director training is delivered by online tutorials and by "how-to" sessions that include video and interactive content. This makes training immediately available and helps to bring users up to speed as quickly as possible.
- **Support Agreements —** Uptime, risk and financial predictability are the hidden variables in total cost of ownership. The ability to manage these is what makes Grass Valley Support Agreements a cost-effective tool for operations' optimization. GV Director Support Agreements extend coverage past the standard warranty period. The Elite Support Agreement is designed for critical environments where very high uptime and quick problem resolution is essential. It provides 24x7 technical phone support, call center prioritization, service level objectives, software updates and upgrades, and advance parts exchange. An Elite Support Agreement insures that GV Director users have both operational efficiency and financial predictability.





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