

# T2 Express, Pro, and Elite iDDRs

## INTELLIGENT DIGITAL DISK RECORDERS

Each T2 intelligent digital disk recorder (iDDR) brings full high-definition capture and playback to the video professional. Additionally, T2 Express, Pro, and Elite iDDRs support real-time HD crossconversion and faster than real-time playlist rendering.



Grass Valley® T2™ iDDRs are complete and self-contained SD and HD audio/video playout centers. The front-panel transport controls have the look and feel of traditional VTRs, and its two output and one record channels support SD and HD content. The crisp, clear LCD front panel can display high-quality images and is complemented by a software application suite for managing and selecting media clips, clip editing and trimming, and playout—including playlist creation.

Featuring extensive rear-panel audio/video connectivity, T2 iDDRs can also accept files via USB 2.0, or by data transfer over a standard Gigabit Ethernet network. T2 iDDRs also accept media from other applications including HQ AVI, MPEG-2, QuickTime, Windows Media Video HD, JPEG, TIFF, TARGA, and BMP files.

With the T2 iDDR, users can exchange content at high speed over a network or via removable media such as SSD

through USB or the dedicated 2.5-inch HDD/SSD slot. Further, the T2 iDDR can be controlled by our Indigo™ A/V mixer—combining features normally found in video production switchers, presentation mixers, and audio mixers—to create a powerful presentation system. Every T2 iDDR has two playout channels for independent editing and previewing, or for delivering content to two different display systems simultaneously, including left-eye/right-eye 3D content.

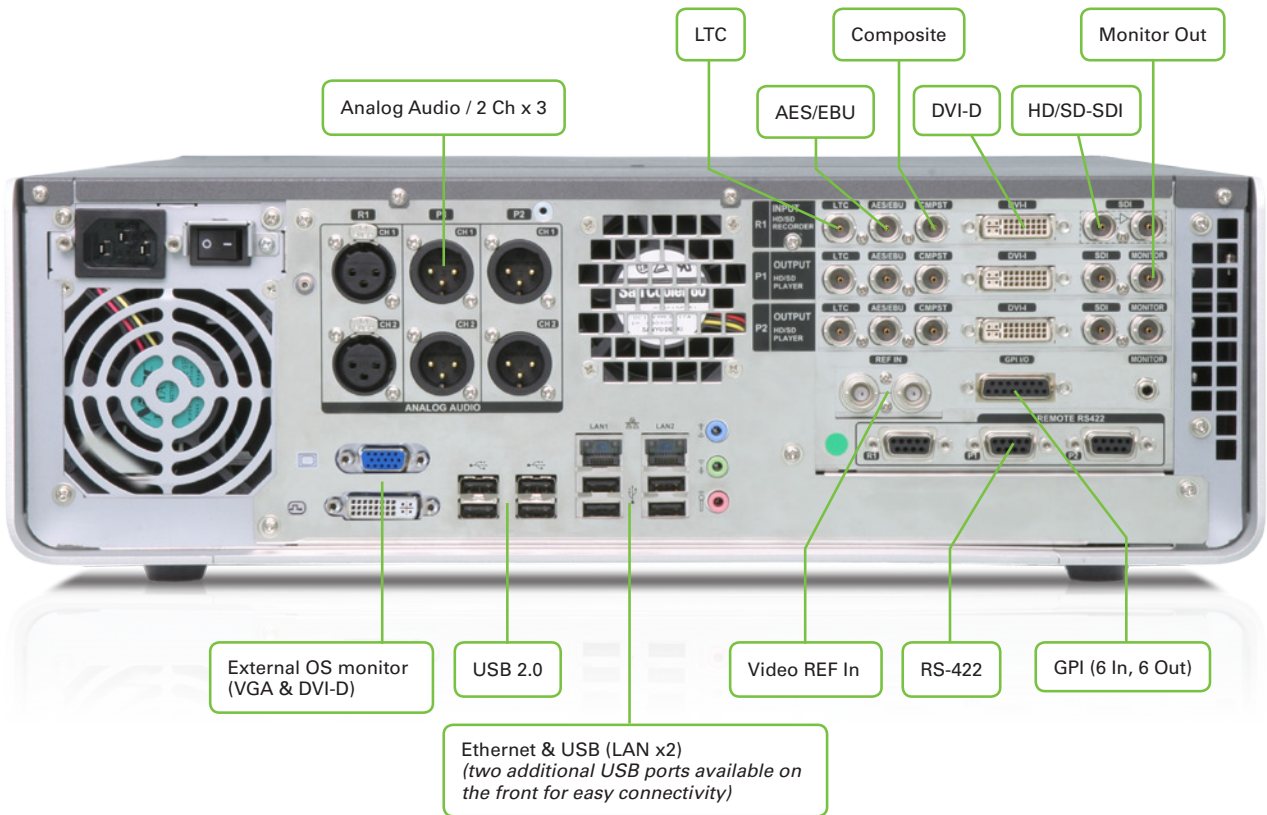
## KEY FEATURES

- True HD support — 720p, 1080i, and 1080p
- Up/downconversion for a wider range of resolutions and application support
- Native import/playback for most standard formats (see list below)
- Multiformat support (transcoding to Grass Valley HQ AVI) for most standard and broadcast formats (see list below)
- Three decks for the price of one – 1 record and 2 playback channels work independently and simultaneously
- 2-channel synchronized playback for key/fill rolls, edge blend displays, multi-screen, and 3D applications
- Embedded audio (8 channels per SDI connection)
- AES/EBU audio supported
- Easy-to-use front panel interface
- Workstation mode included as standard
- Simple on-the-fly editing, including trimming, mark in/out, basic transition effects, and insertion of placeholders for playlists
- New, robust design – engineered to withstand punishing live event and mobile production environments
- Integration support for third-party control (BVW, GPIO, and AMP)
- Ingest management including:
  - MXF XDCAM format support with closed caption data
  - Direct ingest to external media/storage
  - User-defined clip names
  - Scheduler
- Import from Final Cut Pro in QuickTime format using the free Grass Valley HQ codec for Mac onto an exFAT HDD
- Fast playlist rendering speed (up to 10 times real-time)
- Supports HD to HD real-time crossconversion
- Applications:
  - Events and staging
  - Auditoriums
  - Corporate A/V centers
  - Educational facilities
  - Broadcast display support
  - Regional sports companies
  - Switcher support for playback
- File-based operation enhancements including:
  - FTP transfer rate limit to maintain playback performance
  - NTP Synchronization
  - Watch folder transfers

**FULL-FEATURED FRONT PANEL**



**EXTENSIVE REAR PANEL CONNECTIVITY**



**T2 iDDR Express (HDD)**

- RAID-0 (500 GB HDD x2)
- 1 TB data disk — 14 hours recording capacity (Grass Valley HQ: 150 Mb/s)

**T2 iDDR Pro (HDD)**

- RAID-10 (500 GB HDD x4)
- 1 TB data disk — 14 hours recording capacity (Grass Valley HQ: 150 Mb/s)

**T2 iDDR Elite (SSD)**

- RAID-0 (300 GB SSD x2)
- 600 GB data disk — 8 hours recording capacity (Grass Valley HQ: 150 Mb/s)

**FILE FORMAT SUPPORT**  
(transcoding to Grass Valley HQ AVI)

**NATIVE IMPORT/PLAYBACK FORMATS**

- AVCHD (H.264/AVC)
- AVI (Grass Valley HQ)
- GF (DV, DVCPRO 25, DVCPRO 50, MPEG-2)
- MXF (Grass Valley HQ, AVC-Intra 50, AVC-Intra 100, D10, DV, DVCPRO 25, DVCPRO 50, DVCPRO HD, MPEG-2)
- P2 (DV, DVCPRO 25, DVCPRO 50, DVCPRO HD, AVC-Intra 50, AVC-Intra 100)
- XDCAM (DV, IMX, MPEG-2)
- XDCAM EX (MPEG-2)

- AVCHD (H.264/AVC)
- AVI (Grass Valley HQX, DV, DVCPRO 25, DVCPRO 50, DVCPRO HD, uncompressed)
- GF (DV, DVCPRO 25, DVCPRO 50, MPEG-2)
- GXF (AVC-Intra 100, AVC-Intra 50, D10, DVCPRO HD, DVCPRO 50, DVCPRO 25, DV, MPEG-2)
- MPEG-2
- MXF (Grass Valley HQX, Grass Valley HQ, AVC-Intra 50, AVC-Intra 100, D10, DV, DVCPRO 25, DVCPRO 50, DVCPRO HD, JPEG 2000, MPEG-2)
- P2 (DV, DVCPRO 25, DVCPRO 50, DVCPRO HD, AVC-Intra 50, AVC-Intra 100)
- QuickTime (Grass Valley HQ, Grass Valley HQX, DV, DVCPRO HD, H.264/Canon EOS 5D, ProRes 422, ProRes 4444, JPEG 2000, animation, MPEG-4, Photo JPEG, PNG, uncompressed)
- Windows Media (Windows Media Video)
- XDCAM (DV, IMX, MPEG-2)
- XDCAM EX (MPEG-2)
- Sequenced files (TGA ,BMP, JPG, TIFF, PNG, and GIF)

**IMPORT FILE COMPATIBILITY - TRANSCODE IMPORT**

Container	Video Codec	Audio Codec	Native Import/ Playback	Transcoding (AVI (HQ))	Rewrap MXF (OP-1a)
AVCHD	H.264/AVC	Dolby Digital (AC-3), Linear PCM	Yes	Yes	—
AVI	HQ	Linear PCM	Yes	—	—
AVI	Grass Valley Lossless, DV, DVCPRO 25, DVCPRO 50, DVCPRO HD, Grass Valley HQX, uncompressed	Linear PCM	—	Yes	—
GF	DV, DVCPRO 25, DVCPRO 50, MPEG-2	Linear PCM (48 kHz, 16-bit/24-bit)	Yes	Yes	—
GXF	AVC-Intra 100, AVC-Intra 50, D10, DVCPRO HD, DVCPRO 50, DVCPRO 25, DV, MPEG-2	Linear PCM, A-law	—	—	Yes
MPEG-2	MPEG-2	MPEG-1 Audio Layer-2, Dolby Digital (AC-3), Linear PCM	—	Yes	—
MXF	AVC-Intra 50, AVC-Intra 100, D10, DV, DVCPRO 25, DVCPRO 50, DVCPRO HD, MPEG-2	Linear PCM, A-law	Yes	Yes	—
MXF	HQ	Linear PCM	Yes	Yes	—
MXF	HQX	Linear PCM	—	Yes	—
P2	DV, DVCPRO 25, DVCPRO 50, DVCPRO HD, AVC-Intra 50, AVC-Intra 100	Linear PCM (48 kHz, 16-bit/24-bit)	Yes	Yes	Yes
QuickTime	Grass Valley HQ, Grass Valley HQX, DV, DVCPRO HD, H.264, ProRes 422, ProRes 4444, JPEG 2000, animation, MPEG-4, Photo JPEG, PNG, uncompressed	AAC, Apple Lossless, MP3, ADPCM, A-law, U-law, Linear PCM	—	Yes	—
Windows Media	Windows Media Video	Windows Media Audio	—	Yes	—
XDCAM	DV, IMX, MPEG-2	8 channels AES3, Linear PCM, A-law	Yes	Yes	—
XDCAM EX	MPEG-2	Linear PCM (48 kHz, 16-bit)	Yes	Yes	—

**SPECIFICATIONS**

**T2 iDDR Configurations**

1 SD/HD input, 2 SD/HD outputs

**Video Input**

**Format Support Types:** High-definition, standard-definition

**Connections:** SD/HD SDI, analog component (Y-Pb-Pr), DVI-D, composite

**Recording Format:** AVI-Grass Valley HQ, 4:2:2, XDCAM HD422 (50 Mb/s), HD (25 Mb/s), IMX, DVCAM

Beginning with SP1, T2 can record directly in XDCAM format

**Bit Rate:** Up to 200 Mb/s

**Resolutions SD/Frame Rate:** 720x576i50, 720x486i59.94

**Resolutions HD/Frame Rate:** 1920x1080i59.94, 1920x1080i50, 1920x1080p24, 1920x1080PsF24, 1920x1080p23.98, 1920x1080PsF23.98, 1440x1080i59.94, 1440x1080i50, 1440x1080p24, 1440x1080PsF24, 1440x1080p23.98, 1440x1080PsF23.98, 1280x720p59.94, 1280x720p50

**Video Outputs**

**Format Support Types:** High-definition, standard-definition, computer

**Connections:** SD/HD SDI (one for each playback channel), analog component, DVI-D (one for each playback channel, except RGB), composite

**Playback Format (Native Import/Playback):**

- AVCHD – H.264/AVC
- AVI – Grass Valley HQ
- GF – HD I-Frame only (100 Mb/s), HD Long GOP (50 Mb/s), DVCPRO 50, DVCPRO 25, DV, MPEG-2
- MXF – Grass Valley HQ, AVC-Intra 100, AVC-Intra 50, DVCPRO HD, DVCPRO 50, DVCPRO 25, DV, D10, MPEG-2
- P2 – AVC-Intra 100, AVC-Intra 50, DVCPRO HD, DVCPRO 50, DVCPRO 25, DV
- XDCAM – HD422 (50 Mb/s), HD (35 Mb/s, 25 Mb/s, 18 Mb/s), IMX, DVCAM
- XDCAM EX – HD (35 Mb/s, 25 Mb/s)

**Bit Rate:** Up to 200 Mb/s per channel

**Resolutions SD/Frame Rate:** 720x576i50, 720x486i59.94

**Resolutions HD/Frame Rate:** 1920x1080i59.94, 1920x1080i50, 1920x1080p24, 1920x1080PsF24, 1920x1080p23.98, 1920x1080PsF23.98, 1280x720p59.94, 1280x720p50, 1280x720p23.98

**Computer Resolutions:** 1280x1024, 1024x768, 800x600, 640x480

**Audio Input**

**Analog Audio:** 2 channels, XLR connections

**Digital:**

- AES/EBU (2 channels), BNC connections
- Embedded audio on SDI, HD, or SD (8 channels)

**Recording Format:** 24-bit, PCM, 48 kHz sampling (20-bit PCM for SD-SDI)

**Audio Output**

**Analog Audio:** 2 channels per output video, XLR connections

**Digital:**

- AES/EBU (2 channels), BNC connections
- Embedded audio on SDI, HD, or SD (8 channels)

**Recording Format:** 24-bit, PCM, 48 kHz sampling (20-bit PCM for SD-SDI)

**Export File Compatibility**

**Export:** Grass Valley HQ, MXF (XDCAM HD422 (50 Mb/s), HD (25 Mb/s), IMX, DV)

**Transcode Import (transcoding to Grass Valley HQ AVI):**

- AVCHD – H.264/AVC
- AVI – Grass Valley Lossless, Grass Valley HQX, DVCPRO HD, DVCPRO 50, DVCPRO 25, DV, uncompressed
- GF – DVCPRO 50, DVCPRO 25, DV, MPEG-2
- GXF (AVC-Intra 100, AVC-Intra 50, D10, DVCPRO HD, DVCPRO 50, DVCPRO 25, DV, MPEG-2)
- MPEG-2
- MXF – Grass Valley HQX, Grass Valley HQ, AVC-Intra 100, AVC-Intra 50, D10, DVCPRO HD, DVCPRO 50, DVCPRO 25, DV, JPEG 2000, MPEG-2
- P2 – AVC-Intra 100, AVC-Intra 50, DVCPRO HD, DVCPRO 50, DVCPRO 25, DV
- QuickTime – Grass Valley HQ, Grass Valley HQX, ProRes 422, ProRes 4444, Canon EOS movie (H.264/AVC), DVCPRO HD, DV, JPEG 2000, animation, MPEG-4, Photo JPEG, PNG, uncompressed
- Sequenced files – TGA, BMP, JPG, TIFF, PNG, GIF
- Windows Media – Windows Media Video
- XDCAM – HD422 (50 Mb/s), HD (35 Mb/s, 25 Mb/s, 18 Mb/s), IMX, DVCAM
- XDCAM EX – HD (35 Mb/s, 25Mb/s)

**Control**

**Protocol:** BVW (pre-roll/post-roll, variable control in sync mode, audio monitoring with variable speed), GPI, AMP (Advanced Media Protocol) for Indigo A/V Mixer and external control software

**Connections:** RS-422 (9-pin D Conn per channel), Ethernet

**Technology**

**Connections:** Gigabit Ethernet, USB 2.0, VGA, DVI-D

**Storage Capacity:**

- Express: 1 TB (RAID-0, 500 GB HDD x2), Approx. 14 hours of HD @ Grass Valley HQ (150 Mb/s)
- Pro: 1 TB (RAID-10, 500 GB HDD x4), Approx. 14 hours of HD @ Grass Valley HQ (150 Mb/s)
- Elite: 600 GB (RAID-0, 300 GB SSD x2), Approx. 8 hours of HD @ Grass Valley HQ (150 Mb/s)

**Bit Rate:** Up to 200 Mb/s per channel

**Physical**

**Dimensions:** 550x430x140 mm (21.6x16.9x5.5 in.)

**Weight:** 15 kg (33 lbs.)

**Operating Temperature:** 5°C to 35°C (41°F to 95°F)

**Options and Accessories**

**Rackmount Kit**

**MAXIMIZE AND OPTIMIZE YOUR INVESTMENT**



With program production and distribution becoming ever more complex and affecting business issues on a daily basis, you need a trusted partner that understands those complexities and how to convert them into opportunities. Grass Valley's team of experienced engineers and system integrators can help you turn your challenges into opportunities in the most efficient and cost-effective way possible, from system design all the way through to commissioning. Grass Valley Professional Services helps you to:

**Define:** We consult with you to help define your business and technology requirements and then design the right solutions to meet them.

**Deploy:** Our professional service organization, backed by proven project management methodologies, can take you from design through deployment, commissioning, and training.

**Support:** We offer a complete portfolio of support services to keep your systems running, and help manage your long-term maintenance needs.

For information about Grass Valley, please visit [www.grassvalley.com](http://www.grassvalley.com).

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