T2 4K Series

4K/HD Digital Recorder/Players

T2 4K digital recorder/players models bring 4K DCI, 4K UHD or full high-definition capture and playback to the video professional.

The T2 4K digital recorder/players from Grass Valley are 4K DCI, 4K UHD or HD/SD audio/video playout centers.

The front-panel transport controls have the look and feel of a traditional VTR. In 4K mode (DCI or UHD), one record or one output channel supports 4K content. In HD/SD mode one record and two output 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 rear-panel video/audio/remote/LTC connectivity, T2 4K can also accept files via USB 3.0, or by data transfer over a standard Gigabit Ethernet network, including Grass Valley HQX, XAVC, XAVC S, XDCAM, P2, AVC-ULTRA, Apple ProRes 422, Avid DNxHD and MPEG-2 files.

Further, T2 4K digital recorder/players can be controlled by video production switchers, presentation mixers and audio mixers — to create a powerful presentation system. Every T2 4K has two playout HD/SD channels for independent editing and previewing, or for delivering content to two different display systems simultaneously, useful for edge-blending and displaying 3D content.

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### T2 4K Series

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**Storage**
- **System**: M.2 SSD 64 GB
- **Data**: SSD 2 TB (RAID-0)

**Power supply unit**
- Redundant PSU
- Single PSU

**Media card reader**
- SD, SD UHS-II, Compact Flash, SxS, 2.5-inch SSD bay
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**Supported capture formats**

**4K DCI/4K UHD**
- 59.94p, 50p, 29.97p, 25p, 24p, 23.98p
- 29.97p, 25p, 24p, 23.98p

**HD 1080**
- 59.94p, 50p, 59.94i, 50i, 29.97p, 25p, 24PsF, 23.98PsF, 24p, 23.98p
- 59.94i, 50i, 29.97p, 25p, 24PsF, 23.98PsF, 24p, 23.98p

**HD 720**
- 59.94p, 50p, 29.97p, 25p, 24p, 23.98p

**SD**
- 59.94i, 50i

**SDI**
- SDI x8 (DIN 1.0/2.3)
- SDI x4 (BNC)*3
- SDI x8 (DIN 1.0/2.3)
- SDI x4 (BNC)*3
- SDI x8 (DIN 1.0/2.3)
- SDI x4 (BNC)*3

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*1 The “Plus” model must be built with the I/O Card Kit (SDI x8) installed into the T2 unit by a reseller in the field.

*2 Need to install the v3.2.0 firmware (or later). The firmware will be released in Q4 2019.

*3 These are shared by input and output in 4K mode.
**KEY FEATURES**

### Recorder/Player
- 4K (2160p) ingest support (4K: 1 in 0 out mode)
- 4K (2160p) playback support (4K: 0 in 1 out mode)
- HD (1080p) ingest and playback support (HD: 1 in 2 out mode)
- HD (1080p) playback support (HD: 0 in 3 out mode) *(Elite and Pro only)*
- HD 2 channel synchronizes playback for key/fill rolls, edge blend displays, multiscreen and 3D applications
- Chasing playback while ingesting (HD/SD)
- Supports 720p to 1080p/i real-time crossconversion
- Direct ingest to external media/storage device
- Scheduled recording
- Ancillary data recording and playback
- E-to-E mode
- Video monitor output and on-screen display

### Import/Export
- Native import/playback for most standard formats
- Multicodec support (transcoding to Grass Valley HQX.AVI) for most standard and broadcast formats
- FTP transfer rate limited to maintain playback performance
- Watch folder transfers
- Export to Sony XDCAM drive (U1/U2)

### Editing
- Direct access to a media folder with EDIUS and the ability to edit a growing file — AVI (Grass Valley HQX) and MXF (Grass Valley HQX/XDCAM/Apple ProRes/Avid DNxHD) *(Elite only)*
- Export a growing AVI (Grass Valley HQX) file via CIFS
- Export a growing MXF (Grass Valley HQX/XDCAM/Apple ProRes/Avid DNxHD) file via FTP/CIFS
- Import from Final Cut Pro in QuickTime format using the free Grass Valley HQ codec for Mac onto an exFAT HDD
- Convert and CIFS export from AVI (Grass Valley HQX) to MXF (Grass Valley HQX/XDCAM/Apple ProRes/Avid DNxHD) or MOV (Apple ProRes)

### Front Panel
- Easy-to-use front panel interface and jog/shuttle

### Workstation
- Workstation mode included as standard
- Simple on-the-fly editing, including trimming, mark in/out, markers with comments, basic transition effects and insertion of placeholders for playlists
- Keyboard shortcuts and mouse customization on workstation

### Remote
- Synchronized playback using LTC input (Timecode chasing)
- Synchronized playback for multiple T2s using GPI input/RS-422
- Integration support for third-party control (BVW, GPIO and AMP)

### Device
- SDI embedded audio (8 channels)
- Robust design — engineered to withstand punishing live event and mobile production environments
- ASIO audio output support
- 2SI/SQD input/output via Quad 3G-SDI *(Elite and Pro only)*
- Redundant power supply *(Elite only)*
- Media card reader *(Elite only)* — SD, SD (UHS-II), CF, SxS, 2.5-inch SSD

### Maintenance
- Full data backup and restore feature

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**DATASHEET**

**T2 4K Series 4K/HD Digital Recorder/Players**

- **Product Name:** T2 4K Series 4K/HD Digital Recorder/Players
- **Manufacturer:** Grass Valley
- **Website:** www.grassvalley.com

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**Media Card Slots (Elite model only)**

**Indicators for Redundant Power Supply (Elite model only)**

**Power Button**

**USB 3.0 x2**

**Volume**

**Audio Jack**

**Control Buttons**

**Jog/Shuttle**

**LCD Touchscreen**

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**www.grassvalley.com**

2
T2 4K Series 4K/HD Digital Recorder/Players

**ORDERING**

**T2 4K Series**

**218509**

**KTR4-ELT-CV40 — T2 4K Elite**
- 2 TB usable SSD storage: 1 TB SSD x2 (RAID-0)
- 4K DCI/4K UHD (up to 59.94p/50p) and HD 1080 (up to 59.94p/50p)
- Media card reader bay: SD, SD (UHS-II), CF, SxS, 2.5-inch SSD
- Redundant power supply unit
- Direct access to internal storage (CIFS)

**Package Contents**
- T2 4K Elite unit
- T2 4K read me first
- AC power supply cable x6 (NA/JP x2, UK x2, EMEA x2)
- Registration card for the T2

**218493**

**KTR4-PRO-CV40 — T2 4K Pro**
- 2 TB usable HDD storage: 2TB HDD x2 (RAID-0)
- 4K DCI/4K UHD (up to 59.94p/50p)

**Package Contents**
- T2 4K Pro unit
- T2 4K read me first
- AC power supply cable x3 (NA/JP x1, UK x1, EMEA x1)
- Registration card for the T2

**218486**

**KTR4-EXP-CV40 — T2 4K Express**
- 2 TB usable HDD storage: 1 TB HDD x2 (RAID-0)
- 4K DCI/4K UHD (up to 29.97p/25p or 59.94p/50p)

**Package Contents**
- T2 4K Express unit
- T2 4K read me first
- AC power supply cable x3 (NA/JP x1, UK x1, EMEA x1)
- Registration card for the T2

**T2 4K Plus Series**

**KTR4-ELT-CV00**

**T2 4K Elite (No I/O card)**
- Requires T2 4K I/O Card Kit (KTR4-I0-CV80-KIT)
- 2TB usable SSD storage: 1TB SSD x2 (RAID-0)
- 4K DCI/4K UHD (up to 59.94p/50p)
- Media card reader bay: SD, SD (UHS-II), CF, SxS, 2.5-inch SSD
- Redundant power supply unit
- Direct access to internal storage (CIFS)

**Package Contents**
- T2 4K Elite unit (No I/O card)
- T2 4K read me first
- AC power supply cable x6 (NA/JP x2, UK x2, EMEA x2)
- Registration card for the T2

**KTR4-PRO-CV00**

**T2 4K Pro (No I/O card)**
- Requires T2 4K I/O Card Kit (KTR4-I0-CV80-KIT)
- 2TB usable HDD storage: 1TB HDD x2 (RAID-0)
- 4K DCI/4K UHD (up to 59.94p/50p)

**Package Contents**
- T2 4K Pro unit (No I/O card)
- T2 4K read me first
- AC power supply cable x3 (NA/JP x1, UK x1, EMEA x1)
- Registration card for the T2

**KTR4-EXP-CV00**

**T2 4K Express (No I/O card)**
- Requires T2 4K I/O Card Kit (KTR4-I0-CV80-KIT)
- 2TB usable HDD storage: 1TB HDD x2 (RAID-0)
- 4K DCI/4K UHD (up to 29.97p/25p or 59.94i/50i)

**Package Contents**
- T2 4K Express unit (No I/O card)
- T2 4K read me first
- AC power supply cable x3 (NA/JP x1, UK x1, EMEA x1)
- Registration card for the T2

**KTR4-I0-CV80-KIT**

**T2 4K I/O Card Kit (SDI x8)**
- To be ordered together with T2 4K Series (No I/O card) to build the T2 4K Plus Series. Available commonly for KTR4-ELT-CV00, KTR4-PRO-CV00 and KTR4-EXP-CV00. Must be installed in the field by a reseller.

**Option**

**600476**

**iDDR2-RACK-W — T2 Rackmount Kit**
- Rackmount kit for T2 4K Series
**Description**
4K/HD Recorder/Player

**Model Number**
T2 4K Elite: KTR4-ELT-CV40
T2 4K Pro: KTR4-PRO-CV40
T2 4K Express: KTR4-EXP-CV40
T2 4K Elite Plus: KTR4-ELT-CV00 + KTR4-I0-CV80-KIT
T2 4K Pro Plus: KTR4-PRO-CV00 + KTR4-I0-CV80-KIT
T2 4K Express Plus: KTR4-EXP-CV00 + KTR4-I0-CV80-KIT

**Capacity:**
- 4K: 0 in 1 out
- 4K: 1 in 0 out
- HD/SD: 0 in 3 out
- HD/SD: 1 in 2 out
- 4K: 0 in 1 out
- 4K: 1 in 0 out
- T2 4K Elite Plus/Pro Plus:
  - HDD (RAID-0), 2 TB
  - SSD (RAID-0), 2 TB
- T2 4K Elite:
  - 64 GB M.2 SSD
- T2 4K Pro Plus:
  - 64 GB M.2 SSD

**Data:**
- 4K Elite/Elite Plus: SSD (RAID-0), 2 TB
- 4K Elite/Elite/Pro/Pro Plus: SSD (RAID-0), 2 TB
- 4K Elite/Elite/Pro/Pro Plus: HDD (RAID-0), 2 TB

**Storage:**
- System:
  - M.2 SSD
  - 64 GB
- 

**Power Supply Unit:**
- T2 4K Elite/Elite Plus: Redundant PSU
- T2 4K Pro/Pro Plus: Single PSU
- T2 4K Express/Express Plus: Single PSU

**Media Card Reader:**
- T2 4K Elite/Elite Plus: SD, SD UHS-II, Compact Flash, SxS, 2.5 inch SSD bay

**Video Output Format**

**Format Support:**
- 4K DCI, 4K UHD, HD, SD

**Connector (Elite/Pro/Express):**
- BNC (3G/HD-SDI) x4
- BNC (3G/HD-SDI) x8

**Codec:**
- 4K DCI/4K UHD:
  - AVI — Grass Valley HQ
  - MXF — Grass Valley HDX
- HD/SD:
  - AVI — Grass Valley HQ
  - MXF — Grass Valley HDX
- 4K DCI/4K UHD:
  - AVI — Grass Valley HQ
  - MXF — Grass Valley HDX

**Bit rate (Grass Valley HDX):**
- Up to 1.2 Gb/s (4K DCI/4K UHD 59.94/50)
- Up to 600 Mb/s (4K DCI/4K UHD 29.97/25/24/23.98)
- Up to 300 Mb/s (1080p 59.94/50)
- Up to 150 Mb/s (HD, SD)

**Resolution/frame rate (Elite/Elite Plus/Pro/Pro Plus):**

**Video Input Format**

**Format Support:**
- 4K DCI, 4K UHD, HD, SD

**Connector (Elite/Pro/Express):**
- BNC (3G/HD-SDI) x4
- BNC (3G/HD-SDI) x8

**Codec:**
- 4K DCI/4K UHD:
  - AVI — Grass Valley HQ
  - MXF — Grass Valley HDX
- HD/SD:
  - AVI — Grass Valley HQ
  - MXF — Grass Valley HDX
- 4K DCI/4K UHD:
  - AVI — Grass Valley HQ
  - MXF — Grass Valley HDX

**Codec (HD/SD):**
- AVI — Grass Valley HQ
- MXF — Grass Valley HDX

**Bit rate (Grass Valley HDX):**
- Up to 1.2 Gb/s (4K DCI/4K UHD 59.94/50)
- Up to 600 Mb/s (4K DCI/4K UHD 29.97/25/24/23.98)
- Up to 300 Mb/s (1080p 59.94/50)
- Up to 150 Mb/s (HD, SD)

**Resolution/frame rate (Elite/Elite Plus/Pro/Pro Plus):**

**Codec (4K DCI/4K UHD):**
- AVI — Grass Valley HQ
- MXF — Grass Valley HDX

**Codec (HD/SD):**
- AVI — Grass Valley HQ
- MXF — Grass Valley HDX

**Note:** Some codecs are able to output in one channel only

* Transcode to AVI (Grass Valley HD2) when importing
** Rewrap to MXF when importing
**SPECIFICATIONS (CONT.)**

Bit rate (Grass Valley HQX):
- Up to 1.2 Gbps (4K DCI/4K UHD 59.94/50)
- Up to 600 Mb/s (4K DCI/4K UHD 29.97/25/24/23.98)
- Up to 300 Mb/s (1080p 59.94/50)
- Up to 150 Mb/s (HD, SD)

Resolution/frame rate (Elite/Pro):
- [4K DCI] 4096x2160p (59.94p, 50p, 29.97p, 25p, 24p, 23.98p)
- [4K UHD] 3840x2160p (59.94p, 50p, 29.97p, 25p, 24p, 23.98p)
- [HD] 1920x1080p (59.94p, 50p, 29.97p, 25p, 24p, 23.98p), 1920x1080PseF (24PseF, 23.98PseF), 1280x720p (59.94p, 50p)
- [SD] 720x486i (59.94i), 720x576i (50i)

Resolution/frame rate (Express):
- [4K DCI] 4096x2160p (29.97p, 25p, 24p, 23.98p)
- [4K UHD] 3840x2160p (29.97p, 25p, 24p, 23.98p)
- [HD] 1920x1080p (29.97p, 25p, 24p, 23.98p), 1920x1080pseF (24PseF, 23.98PseF), 1280x720p (59.94p, 50p)
- [SD] 720x486i (59.94i), 720x576i (50i)

Audio Input Format
- Input digital: SDI embedded audio (8 ch)

Audio Output Format
- Output digital: SDI embedded audio (8 ch)

Monitor output: BNC x2 (for L ch/R ch) (shared with timecode output)

Headphone: Stereo jack x1

Timecode
- Input: BNC x1
- Output: BNC x2 (shared with audio monitor output)

Reference
- Input (Elite/Pro/Express): BNC x1 (analog blackburst or HD tri-level sync)
- Input (Elite Plus/Pro Plus/Express Plus): DIN 1.0/2.3 x1 (analog blackburst or HD tri-level sync)

Remote Control
- GPIO: D-Sub 25-pin x1 (8 in 8 out)
- RS-422 (BVW):
  - RS-422 (D-Sub 9-pin) for controller x1
  - RS-422 (D-Sub 9-pin) for device x3
- Network: AMP (Advanced Media Protocol)
- LAN: RJ45 x 2 (10Base-T/100Base-TX/1000Base-T)
- USB:
  - USB 3.0 x6 (Front x2, Rear x4)
  - USB 2.0 x4 (Rear x4)
- PC Display
  - DisplayPort x1
  - DVI-D x1
  - (DisplayPort and DVI-D cannot be used at the same time)

Mechanical Specifications
- Dimensions (W x D x H): 430 x 550 x 140 mm (16.9 x 21.6 x 5.5 in.)
- Weight: 16.5 kg (36.4 lbs.)
- Operating Temperature: 5°C to 35°C (41°F to 95°F)
- Operating Relative Humidity: Max. 80% (non-condensing)

Electric Power Consumption
- Up to 200W

Workstation mode.