

K2 Media Client

MULTI-CHANNEL VIDEO/AUDIO PRODUCTION
WITH ON-BOARD SD & HD I/O

You can configure a K2 media client as part of a SAN solution with over 100 channels of sharing common storage—or deploy a standalone client with internal or external storage for use in a distributed environment.



The Grass Valley™ K2 media server/media client system is ideal for broadcast and production environments, offering support for a wide range of applications to address specific workflow needs in the most cost-efficient and cost-effective ways possible.

As a critical part of this system, K2 clients support a number of standard- and high-definition (SD and HD) video formats and channel configurations (see table, third page). They also have agile playout capabilities and advanced video-playback and audio features.

You can configure a K2 client as part of a SAN solution comprised of a K2 media client, K2 media server, and K2 RAID storage—or deploy a standalone client with internal or external storage and built-in server for use in a distributed environment. Both the SAN and standalone systems are optimized to work in a file-based environment.

K2 Platform – Overview

The K2 platform is comprised of one or more four-channel K2 media clients connected to one or more K2 media servers and K2 RAID-protected storage. The K2 media client performs all video and audio I/O using built-in encoders and decoders. You can attach more than 100 media client channels to the K2 media servers and RAID system.

For its part, the K2 media server manages the file system and controls file transfer protocol (FTP) operations. The K2 storage system offers options for internal drives or external RAID systems that can scale to more than 50 terabytes.

K2 Media Client

The standalone K2 media client is built around a robust computer platform with redundant hot-swappable power supplies, mirrored system drives, redundant Ethernet ports, and extra cooling as standard features. Two iSCSI or Fibre Channel ports on the client

switch to provide a backup data path in case of failure, giving you a cost-effective way to design a no-single-point-of-failure system.

To this architecture we've added our Emmy® Award-winning core video technology. Built around a high-performance RISC processor and a real-time operating system, it performs video and audio processing in the robust and secure manner needed for a 24/7, frame-accurate environment.

Agile Playout Capabilities

You don't always control the format of the materials you receive—but using the K2 platform, it doesn't matter. The media client will play out any supported format back-to-back without interruption; there is no need to transcode materials into a common format.

For instance, the SD media client can play DV25, MPEG I-Frame, DV50, and MPEG Long GOP materials back-to-back seamlessly.

KEY FEATURES

- Three client options:
 - 2 record/2 playback SDI or composite channel entry-level SD system for DV/MPEG-2
 - 4 bi-directional SDI channel SD system for DV, MPEG-2
 - 2-4 SDI channel SD/HD MPEG-2 system with built-in encoders, up- and down-conversion, user-definable aspect ratio conversion, and closed caption preservation
- Standalone clients with internal storage
- SAN clients with iSCSI or Fibre Channel connectivity
- Standard redundant power supplies, cooling, system disks, Ethernet ports
- MPEG-2@ML/HL, 4:2:0/4:2:2, I-Frame and Long GOP up to 100 Mb/s including XDCAM EX, XDCAM HD, D10/IMX (see specifications)
- DV support includes DV, DVCAM, DVCPRO25, DVCPRO50
- Comprehensive up/down conversion support:
 - AFD support for aspect ratio conversion
 - Captioning preservation
 - Ancillary data preservation
- Scales from four channels to more than one hundred channels on a SAN
- Open file system provides interoperability with Archive and other devices via MXF, GXF, QuickTime, AVI, MOV:
 - Interoperable with Pathfire, DG FastChannel, Pinnacle, Harris, and Omneon servers
 - Support for XDCAM, P2 acquisition formats
- Comprehensive multilingual audio support:
 - 16 audio channels per video channel
 - PCM, Dolby E, AC-3 support
 - CC/Teletext import
- Alarm monitoring via SNMP with NetCentral™

PRODUCT DATA SHEET

The SD/HD client can play an SD or HD timeline with any SD format or HD MPEG-2 clips up to 100 Mb/s. It automatically up- or down-converts a clip to the proper output format. It also performs 720p/1080i cross-conversion, offers full support for AFD to ensure proper 16:9/4:3 aspect ratio conversion and preserves any SMPTE 608/708 closed captioning information—all in real time. As a result, you only need to store a single format version of a clip and play it out in the appropriate SD or HD format.

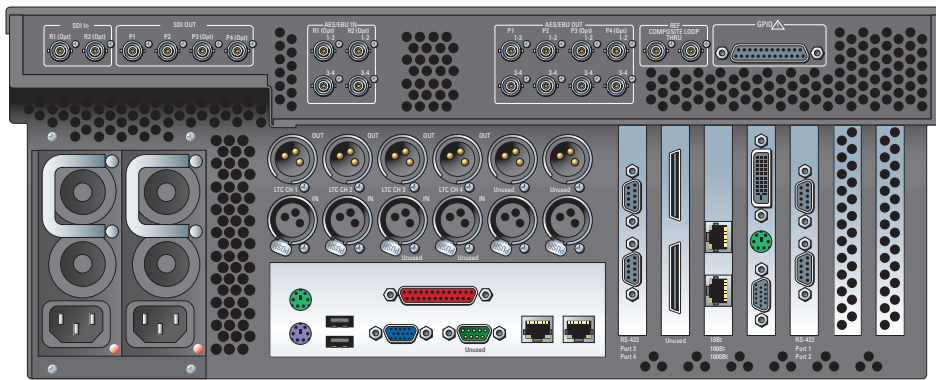
Advanced Video-Playback Features

The K2 media client features smooth, high-quality, off-speed play, and enhanced jog/shuttle control in both directions with all formats, including MPEG Long GOP. It employs predictive fetching to pre-decode the required frames (including B and P frames) during jog/shuttle operations for smooth video playback. For slow-motion playback, the media client uses line interpolation to smooth out any vertical jitter for the highest-quality slow-motion playback possible for all compression formats, including MPEG Long GOP. This capability makes the client ideal for sporting events.

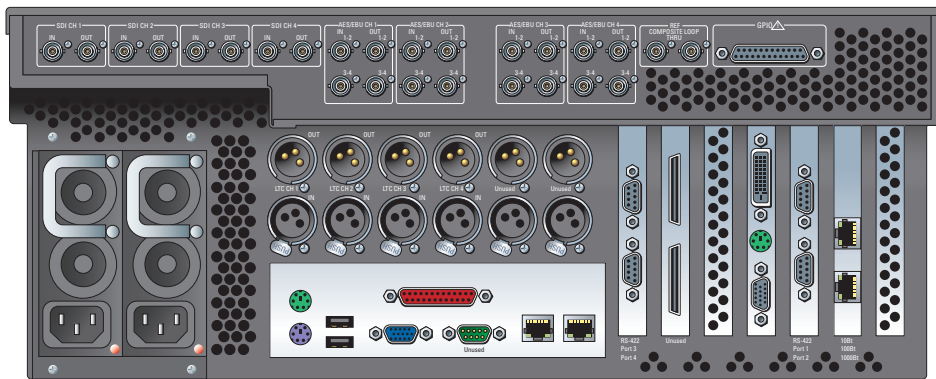
Sophisticated Audio Features For Multilingual Support

Each video clip can have up to 32 compressed or uncompressed audio tracks stored on disk, each track identified by a language descriptor for easy track management and each channel can play out up to 16 different languages. Additional audio features of the K2 media client include scrub audio up to 3X, audio meters for each channel, an internal audio-delay capability, and the ability to adjust levels during recording or playback. It also performs a one-field ramp down/ramp up between clips to eliminate audio clicks and/or pops.

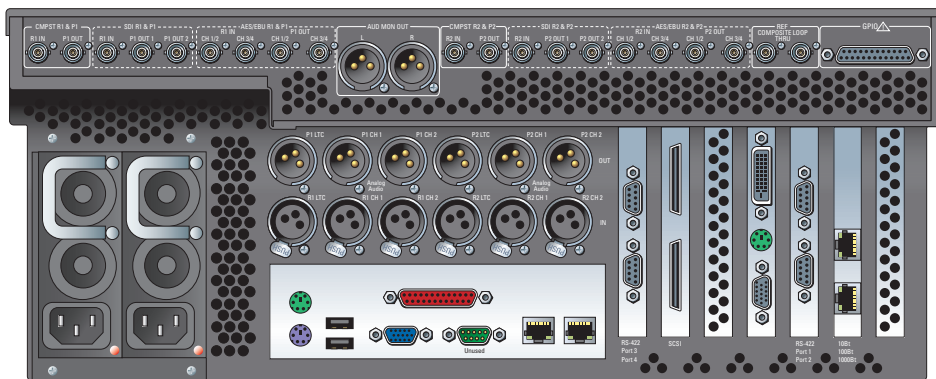
REAR VIEW - SD/HD MEDIA CLIENT (K2-HD-XX)



REAR VIEW - SD MEDIA CLIENT (K2-SD-04)



REAR VIEW - SDA MEDIA CLIENT (K2-SDA-22)



SPECIFICATIONS

K2 Client Specifications

K2 Client Specifications	K2-SDA-22	K2-SD-04	K2-HD-xx
Description	2 record/2 playout SD channels	4 bi-directional SD channels	2, 3, or 4 SD/HD channels
Compression Formats	<p>Standard:</p> <ul style="list-style-type: none"> DV, DVCAM, DV25 MPEG-2@ML 4:2:0, I-Frame & Long GOP, 2-15 Mb/s, MPEG-2 @ML 4:2:2, I-Frame & Long GOP, 4-25 Mb/s <p>Optional:</p> <ul style="list-style-type: none"> MPEG-2@ML 4:2:2, I-Frame & Long GOP, to 50 Mb/s D10/IMX30/40/50 DV50 	<p>Standard:</p> <ul style="list-style-type: none"> DV, DVCAM, DV25 MPEG-2@ML 4:2:0, I-Frame & Long GOP, 2-15 Mb/s MPEG-2@ML 4:2:2, I-Frame & Long GOP, 4-25 Mb/s <p>Optional:</p> <ul style="list-style-type: none"> MPEG-2@ML 4:2:2, I-Frame & Long GOP, to 50 Mb/s D10/IMX30/40/50 DV50 	<p>Standard:</p> <p>HD</p> <ul style="list-style-type: none"> MPEG-2@HL 4:2:0, I-Frame & Long GOP, 12-80 Mb/s MPEG-2@HL 4:2:2, I-Frame & Long GOP, 20-100 Mb/s XDCAM EX XDCAM HD (25, 35, 50 Mb/s) HDV playout <p>SD</p> <ul style="list-style-type: none"> MPEG-2@ML 4:2:2, I-Frame & Long GOP, 4-50 Mb/s MPEG-2@ML 4:2:0, I-Frame & Long GOP, 2-15 Mb/s D10/IMX 30/40/50 playout
Video Playout Channels	<ul style="list-style-type: none"> 2 SDI or analog composite channels 2 BNC outputs per channel, 75Ω SDI: SMPTE 259M, ITU-R601, 525/625 line component, 10-bit Analog: SMPTE170M, conforms to CCIR Report 624 	<ul style="list-style-type: none"> 4 bi-directional SDI channels 4 BNC, 75Ω SDI: SMPTE 259M, ITU-R601, 525/625 line component, 10-bit 	<ul style="list-style-type: none"> 2, 3, or 4 HD/SD-SDI play channels (3 playout channels in 720p mode) 4 BNC, 75Ω SD SDI: SMPTE 259M, ITU-R601, 525/625 line component, 10-bit HD-SDI: SMPTE 292M, 720p/50, 10-bit
Video Record Channels	<ul style="list-style-type: none"> 2 SDI or analog composite channels 2 BNC outputs per channel, 75Ω SDI: SMPTE 259M, ITU-R601, 525/625 line component, 10-bit 	<ul style="list-style-type: none"> 4 bi-directional SDI channels 4 BNC, 75Ω SDI: SMPTE 259M, ITU-R601, 525/625 line component, 10-bit 	<ul style="list-style-type: none"> 0, 1, or 2 SD/HD-SDI record channels SD SDI: SMPTE 259M, ITU-R601, 525/625 line component, 10-bit HD-SDI: SMPTE 292M, 1080i/25, 720p/50, 10-bit
Video Format	SDI or analog composite	SDI	SD-SDI, HD-SDI
Video Frame Rates	525@29.97 Hz; 625@25 Hz	525@29.97 Hz; 625@25 Hz	<ul style="list-style-type: none"> 525@29.97 Hz; 625@25 Hz 1080@29.97, 25 Hz 720p@59.94, 50 Hz
Audio Tracks	<ul style="list-style-type: none"> Up to 4 tracks/video 16 tracks per frame 32 audio tracks per clip stored on disk 	<ul style="list-style-type: none"> Up to 16 tracks/video 64 tracks per frame 32 audio tracks per clip stored on disk 	<ul style="list-style-type: none"> Up to 16 tracks/video 64 tracks per frame 32 audio tracks per clip stored on disk
Embedded Audio Tracks (per Video Channel)	4 tracks (2 AES pairs)	16 tracks (8 AES pairs)	16 tracks (8 AES pairs)
Discrete AES/EBU Audio Tracks (per Video Channel)	<ul style="list-style-type: none"> 4 tracks (2 AES pairs) audio 2 BNC connectors per video input and output; 2 tracks per BNC connector Return loss: > 15 dB, 5-270 kHz 	<ul style="list-style-type: none"> 4 tracks (2 AES pairs) audio 2 BNC connectors per video input and output; 2 tracks per BNC connector Return loss: > 15 dB, 5-270 kHz 	<ul style="list-style-type: none"> 4 tracks (2 AES pairs) audio 2 BNC connectors per video input and output; 2 tracks per BNC connector Return loss: > 15 dB, 5-270 kHz
Analog Audio Tracks (per Video Channel)	2 input and 2 output tracks	None	None
Audio Specification	<ul style="list-style-type: none"> Input: 48 kHz, 16-, 20-, or 24-bit digital audio PCM Output: 48 kHz clock derived from video reference, 16- or 24-bit Compressed audio types: AC-3 and Dolby E pass-through SD-SMPTE 259M 	<ul style="list-style-type: none"> Input: 48 kHz, 16-, 20-, or 24-bit digital audio PCM Output: 48 kHz clock derived from video reference, 16- or 24-bit SD-SMPTE 259M Compressed audio types: AC-3 and Dolby E pass-through 	<ul style="list-style-type: none"> Input: 48 kHz, 16-, 20-, or 24-bit digital audio PCM Output: 48 kHz clock derived from video reference, 16- or 24-bit SD-SMPTE 259M, HD-SMPTE 299 Compressed audio types: AC-3 and Dolby E pass-through
Audio Special Features	<ul style="list-style-type: none"> Scrub audio support (±3x) Audio click elimination 	<ul style="list-style-type: none"> Scrub audio support (±3x) Audio click elimination 	<ul style="list-style-type: none"> Scrub audio support (±3x) Audio click elimination
Analog Monitor	Switched to monitor audio of selected track on two male XLRs	None	None

SPECIFICATIONS (CONT.)

K2 Clients With Internal Storage (in hours*)

Drive	8 Mb/s	15 Mb/s	20 Mb/s	DV25	DV50	80 Mb/s	100 Mb/s
5 – 300 GB	275	168	132	95	50	37	29

*Time for video with four 16-bit audio channels, no ancillary data (± 10%)

COMMON SPECIFICATIONS

Power Requirements

- Dual redundant 500W maximum, 300W typical
- Auto-sensing, hot-swap
- 50-60 Hz
- 100-240 VAC

Dimensions

- Height: 17.7 cm (7 in.) – 4 RU
- Width: 45 cm (17.75 in.)
- Depth: 65.4 cm (27.75 in.)
- Weight: 31.5 kg (69.5 lbs.) maximum

Environmental Characteristics

- Operating temperature: 10° to +40°C (50° to 104°F)
- Non-operating temperature: -40° to +60°C (-40° to 140°F)
- Operating relative humidity: 20% to 80% from -5° to +45°C (23° to 113°F)
- Non-operating relative humidity: 10% to 80% from -30° to +60°C (-22° to 140°F)

Redundancy

- Redundant power supplies (hot-swap)
- Redundant cooling
- Teamed Ethernet ports (control, iSCSI, FTP)

GPI

12 in, 12 out – 25-pin D connector

Reference Genlock

- NTSC/PAL color black composite analog
- Two BNC, 75Ω passive loop through
- Burst frequency lock: PAL, +10 Hz at subcarrier NTSC, +20 Hz at subcarrier
- Signal amplitude lock: +6 dB to -3 dB
- Return loss: >40 dB to 5 MHz

Timecode

- LTC SMPTE 12M (4 inputs/4 outputs)
- One XLR per input and one per output
- 1 kΩ input impedance, 50Ω output impedance
- One VITC reader/writer per video channel
- Lines 10-21 on 525 configurations, lines 6-23 on 625 configurations

Control

Interconnects:

- Four RS-422 serial ports
- 100/1000Base-T Ethernet port
- GPIO ports: 12 inputs/12 outputs (25-pin D connector)

Protocols:

- BVW VTR (w/o insert edit)
- Odetics (RS-422)
- VDCP (RS-422)
- AMP (RS-422 and Ethernet)
- Native protocol

Media Exchange

MXF Op1a, GXF (SMPTE 360M), AVI (DV), QuickTime (DV, DVCAM, DVCPRO)

Ports

- Four 100/1000Base-T Ethernet ports
- One USB 2.0 front, two USB 2.0 rear
- Four RS-422 serial ports
- 15-pin SVGA
- PS2 keyboard
- PS2 mouse

Remote Monitoring

Grass Valley NetCentral SNMP-based remote facility-monitoring software

Certifications

UL 60950, FCC Class A, EMC Class A, CE, C-Tick, CSA 60950, IEC 950, EN 60950

ORDERING INFORMATION

K2-SD-04

4 bi-directional SD channels

Options:

K2-SD-50MB – adds 50 Mb/s support

K2-SDA-22

2 record, 2 play SD channels

Options:

K2-SD-50MB – adds 50 Mb/s support

K2-SDA-SAN – adds SAN connectivity

K2-HD-xx

K2-HD-04 – 4 SD/HD play ch.

K2-HD-13 – 1 rec, 3 play SD/HD ch.

K2-HD-22 – 2 rec, 2 play SD/HD ch.

Standalone Storage Options:

- K2-DK-0300-5-R0 – 5 data drives
- K2-DK-0300-10-R0 – 10 data drives
- K2-DK-0300-10 – 5 data and 5 parity drives (RAID 1)

Software Options

K2-APP-PRO – Adds advanced software capabilities

K2-TimeDelay – Adds automated time-delay software

K2-InSync-SAN – Adds synchronization for two SAN file systems

K2-InSync-STA – Adds synchronization for two standalone file systems

K2-AvidTM-SAN – Adds file interchange with Avid SAN systems

K2-AvidTM-Client – Adds file interchange with Avid standalone systems

K2-BaseCamp Express – adds proxy generation, browse, archive and media management

Free Trial Software

A fully functional version of most software is available for a 30-day free trial at www.grassvalley.com/products/servers/k2/

PROFESSIONAL SERVICES

Our professional services offerings ensure optimal system performance and maximize uptime. These services include call centers staffed around the clock; system planning, design, and commissioning; professional training courses; and technical maintenance programs and service agreements.

www.grassvalley.com/support

