

# LDK 8000 Elite Series

## MULTI-FORMAT HIGH-DEFINITION PRODUCTION CAMERA

The LDK 8000 Elite Series sets the standard in high-definition production. Combining excellent picture performance with unique imaging technologies and unrivaled operational flexibility, it's the perfect camera for demanding production work today and into the future.



We offer one of the broadest selections of standard- and high-definition (SD and HD) digital video cameras. With one of the best known imaging design teams in the world and six technical Emmy® Awards, Grass Valley® camera products continue to break ground with innovation and creative ideas.

The LDK 8000 Elite Series of cameras continues and extends this record of exceptional performance. Leveraging our extensive experience in digital cinematography, we designed this HD camera specifically to sample a chosen scene so that it faithfully reproduces what you see. Its color-space technologies ensure accurate color reproduction even in difficult applications, such as mobile production sites where lighting is typically difficult to control.

With three next-generation 9.2-million pixel HD-DPM+™ CCDs, the LDK 8000 Elite is the only camera available that can capture true progressive HD images, natively, and switch instantly between multiple formats and frame rates. Coupled with an extensive feature set, format and transmission system flexibility, combined with excellent performance, it's a perfect match for the intense demands of today's productions.

This flexibility makes the LDK 8000 Elite a superb choice for any live production. With its 1080p origination, selectable in frame rates up to 1080p60, your finished material can closely resemble material finished on film.

With an updated ergonomic design, the LDK 8000 Elite speeds production workflows with focus-assist tools

and smart cards that store image and operational settings. Its transmission system interfaces include those for standard HD triax- and HD fiber-based infrastructures as well as HD wireless for maximum operational flexibility. And its optical design, coupled with a new DSP chipset, gives you even greater confidence in delivering excellent finished program material.

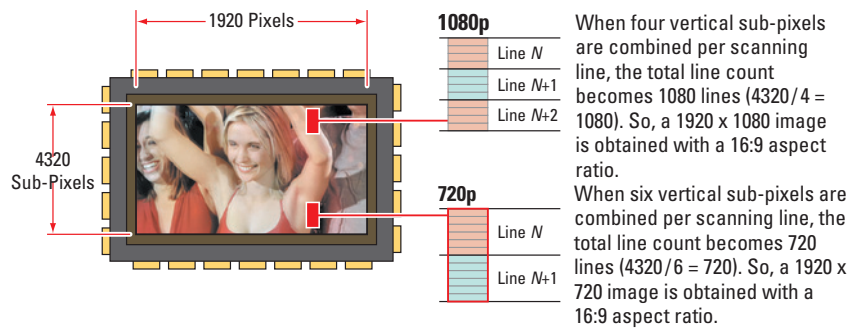
The LDK 8000 Elite system features a compact, robust, and lightweight base station that can output SD and HD signals simultaneously.

By using a Grass Valley SuperXpander large lens adapter kit, complete with an HD high-resolution viewfinder (CRT or LCD), the LDK 8000 Elite becomes a fully featured, full-sized studio camera ready for either studio or mobile applications.

## KEY FEATURES

- Supports instant switching between 1080i and 720p formats at 50 and 59.94 Hz for a wide variety of applications
- Supports all 1080p standard formats, including 1080p50 and 1080p60 (WorldCam version only)
- Secondary color corrector
- User-selectable noise reducer
- Unrivaled video sampling technology:
  - Three 9.2-million pixel HD-DPM+ CCDs
  - 14-bit A/D sampling
  - 34-bit digital signal processing resolution
- Emmy Award-winning dual skin contour circuit makes talent look its best
- Dynamic anti-aliasing-on-sensor processing reduces aliasing artifacts
- Unique viewfinder focus-assist tools:
  - Crawler, for creating an active edge around all objects in focus
  - Instant push-button electronic zoom for momentarily enlarging a subject to check focusing on small details
- Smart cards store image, operational settings for easy recall
- Dynamic Air Control for optimized cooling and silent operation
- Flexible HD transmission system
  - Supports standard triax up to 1,200m (3,900 ft.) and 2,400m (7,800 ft.) with repeater
  - Supports hybrid fiber SMPTE 311 up to 4,000m (13,200 ft.)
- Small, robust base station with superior HD, SD output
- Lightest weight camera body in its class
- SuperXpander kit support enables configuration with full size studio or OB lenses, and accessories
- Unique dockable concept with choice of transmission adapters:
  - HD Triax
  - HD Fiber
  - HD Wireless

DYNAMIC PIXEL MANAGEMENT



CCDs Ensure Exceptional Output

Three next-generation CCDs inside the LDK 8000 Elite ensure exceptional image quality. They are based on frame-transfer technology to guarantee there is no lag or smear to compromise the images you create. These sensors also deliver outstanding signal-to-noise ratio and sensitivity, using on-chip amplifiers to further reduce the noise floor.

The LDK 8000 Elite also features continuous black sampling used so successfully in previous camera designs. With it, you don't need to set a black balance or black level for each scene and then hope things turn out correctly. The selected on-sensor areas are masked from incoming light, and are therefore always sampling absolute black level. Black levels are sampled continuously for each frame, and continuously for each sensor, per frame, ensuring that the black level is always correct as defined at the sensor surface. Its 14-bit analog-to-digital converters preserve this sampled image as it is transferred from the sensors to the digital processing domain.

Easy, Native HD Format Switching

The LDK 8000 Elite continues the easy HD format switching so successfully introduced with earlier camera models. The camera's CCDs switch the pixels on the sensors to create the correct number of video lines necessary for a chosen format, minimizing the need for any further electronic processing.

The result? No quality degradation when switching formats.

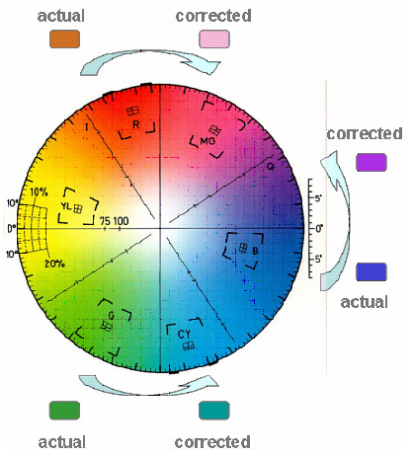
The image formats available using the LDK 8000 Elite include 1080i and 720p formats at 50 and 59.94 Hz, the WorldCam version also includes all 1080p standard formats, including 1080p50 and 1080p60 to future-proof your investment.

Enhanced Digital Signal Processing Chipsets

The LDK 8000 Elite includes all-new DSP circuits and an updated software platform that performs all camera image management functions such as knee, gamma, contours, and variable matrix, with 34-bit digital precision.

New features of the LDK 8000 Elite have added to those already included with the LDK 8000 camera. New circuit and chip designs provide substantial performance improvements to the camera.

Additional new features have been added, such as secondary color correction, where users can select specific colors in a scene and modify them as needed to enhance or highlight certain features within a shot. Color selection is divided into 16 vectors. Users can select the width or range of colors included in a selection, then choose the color they wish to modify. Up to three colors can be modified in a scene. Selected color changes can be saved with scene files during rehearsals then recalled during production.



Other new features include a user selectable noise reducer. While camera performance of the LDK 8000 Elite has already been improved over the LDK 8000, this feature allows users to further extend the performance if needed. In default mode, the noise reducer is off. Users can select one of three levels of incremental noise reduction.

Another function of the new chipset is color temperature correction. A wide choice of color temperature settings are available to ensure repeatable accuracy at each color temperature point. This is one of the key differences between LDK camera architecture and other cameras: The LDK cameras do not use optical color correction filters.

In addition to providing extra color temperature settings at standard temperatures, the chipset lets you apply a continuous correction between standard color temperature points. This capability ensures that colors will always appear natural, as they are corrected according to the actual ambient color temperature sampled at the scene—and not limited by the preset values of a small number of optical filters in a filter wheel. Compared to traditional optical filtering, this approach provides much better speed, flexibility, and color accuracy; it is particularly valuable for the difficult lighting typically encountered in mobile applications, but is also very useful when you need to accurately reproduce the vibrant colors of a studio from difficult camera angles.

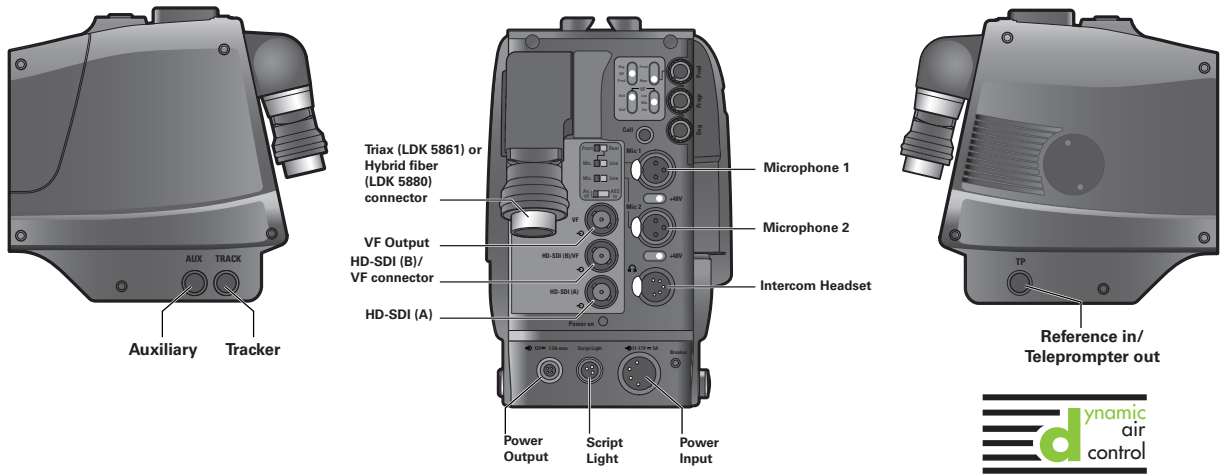
Multiple Versions Available

The LDK 8000 Elite camera head is available in different versions: Enterprise and WorldCam. The Enterprise version supports 1080i/720p HD formats in 50 and 59.94 Hz, and simultaneously provides high-quality SD output in either 50 or 59.94 Hz.

The WorldCam version provides all the functions of the Enterprise version as well as support for digital cinematography formats in 1080p and 720p. These formats provide an impression of motion (motion portrayal) comparable to that of film cameras running at the same speeds.

The WorldCam version of the LDK 8000 Elite also provides convenient built-in frame-rate conversion for easy connection to existing HD peripherals. As a result, you get cost-effective monitoring and recording combined with the motion portrayal of film cameras. The 1080p format at 23.98 Hz, for example, can be converted using 3:2 pull-down to 1080i at 59.94 Hz right inside the camera.

## THE LDK 8000 ELITE DOCKABLE CONCEPT



### Convenient Assist Tools to Speed Production

The LDK 8000 Elite includes a number of features to speed the production process, from focus-assist tools to smart cards.

For precise focusing, which is especially crucial in a high-resolution HD environment, the camera includes a patented “crawler” that creates a motion effect on the edges of an object in sharp focus; the contrasting motion helps a camera operator quickly fine tune that focus.

The camera also features a unique electronic viewfinder zoom function that instantly enlarges an image with a simple press of a button; it’s ideal for focusing on small details.

It’s also easy to pre-configure the LDK 8000 Elite for a variety of different settings—from sports and drama applications to commercial and drama studio settings—by storing operational and image settings on low-cost smart cards. Not only can these camera settings be recalled quickly, you can

also write to the cards and transfer them between cameras for fast reconfiguration. Settings established off-line in rehearsals can be quickly and accurately repeated during a live show.

At a more detailed level, mobile companies regularly delivering sports production from a known set of venues, can save and recall values for each one, making setup extremely quick and reliable.

Additionally, with its true progressive digital cinematography formats, the LDK 8000 Elite WorldCam can address applications such as episodic television or sitcoms, which often require the special motion portrayal of dedicated digital cinematography cameras.

In a worst-case scenario, when the camera has been adjusted far from any normal settings, it takes just two seconds to recall a factory setting. You can also substitute a preferred studio setting for the factory recall setting. In this case, the factory file is only displaced, not deleted.

### Enhanced Cooling

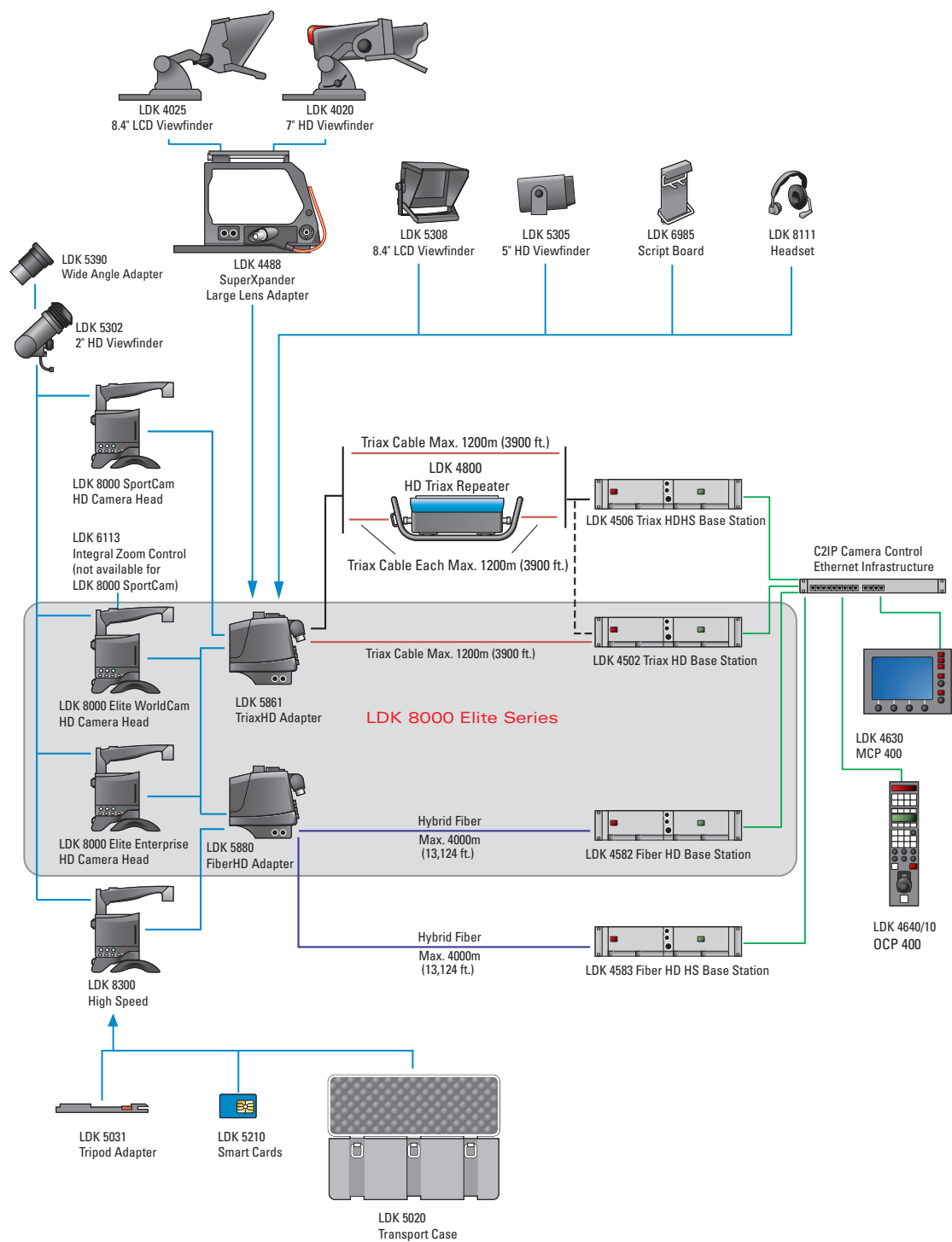
The LDK 8000 Elite series has been designed to optimize the airflow in the camera head and adapter. The integration of the Dynamic Air Control feature further enhances optimized temperature control in the most demanding circumstances.

### Lightweight, Ergonomic Design Ensures Comfort

The LDK 8000 Elite features a lightweight, balanced design for maximum comfort and freedom of movement. A magnesium-alloy body provides a high degree of durability, yet helps keep the camera the lightest in its class. An optional zoomcontrol on the top handle makes awkward ground-level shooting easier, while a rotary triax or fiber HD connector ensures that the cable is free to move with the camera as it follows the action.



LDK 8000 FAMILY



Flexible and Future Proof

The LDK 8000 Elite is designed for flexibility and cost-effective compatibility. Its docking concept, for example, makes it suitable for all applications. Newer applications are being developed continually.

The lightweight LDK 8000 Elite is perfectly suitable for hand-held operations. Alternatively, using the optional Grass Valley SuperXpander kit, you can quickly turn the portable camera into a fully featured studio camera in either triax or fiber mode.

SPECIFICATIONS

HD Camera Head		LDK 8000 Elite	
General			
Power	Triax or DC 12V; 44W incl. 2" viewfinder & Triax HD adapter		
Temperature range	Operating: -20°C to +45°C (-4°F to 113°F) up to 1080p30 Storage: -20°C to 60°C (-4°F to 140°F)		
Weight	5.5 kg (11 lbs.) incl. 2" viewfinder and Triax HD adapter		
Dimension	241 (H) x 164 (W) x 373 (L) with Triax HD adapter		
Camera			
Optical system	F1.4 Prism		
Optical filter wheels	2x motorized wheels		
Optical filters on first wheel	Clear, 1/4 ND, 1/16 ND, 1/64 ND		
Optical filters on second wheel	Clear, four-point star, six-point star, soft focus		
Color-correction filters (digital process)	Electronic: 3200°K, 5600°K, 7500°K, FL, 2 AWB presets,		
Picture elements	3 x 2/3" 16:9 HD-DPM+ CCDs		
Smear	No vertical smear		
Temporal Frequencies	LDK 8000/70 Enterprise	LDK 8000/71 WorldCam	
720p mode	50/59.94 Hz	23.98/25/29.97/50/59.94 Hz	
1080p mode	Requires WorldCam version	23.98/24/25/29.97/50/60 Hz	
1080i mode	50/59.94 Hz	50/59.94 Hz	
Sensitivity 2000 lux	F10 typical (1080i mode)		
S/N ratio in Y signal	60 dB typical		
Modulation depth	55% @ 27 MHz (typical)		
Digital quantization/ DSP processing	14 bits A/D, with 34 bits DSP resolution		
Gain	-6 dB to +30 dB in 3 dB steps (fully variable)		
Exposure control	Down to 1/1000s		
Clean scanning	50.8 to 125 Hz (at 50 Hz temporal frequency); 61 to 150 Hz		
Front microphone input	XLR-3 female, balanced +48V selectable		
Lens connector	12-pin		
Control input	9-pin RS-232C compatible		
Viewfinder connector	20-pin, and, HDMI connector		
Supplied accessories	Operators manual, 1x owner card, 2x user cards		
Options			
2" viewfinder	Model No. LDK 5302	CRT >600 TV lines (center)	
5" viewfinder	Model No. LDK 5305	CRT >650 TV lines (center)	
7" viewfinder	Model No. LDK 4020	CRT >800 TV lines (center)	
8.4" color LCD viewfinder for SXP	Model No. LDK 4025	LCD 1024x576	
8.4" color LCD viewfinder for EFP	Model No. LDK 5308	LCD 1024x576	
Connectivity Head and LDK 5861 Triax HD Adapter			
Input connectors	Front mic in: XLR-3-31 type (female x1) balanced, +48V, ch1		
Output connectors	Audio in: XLR-3-31 type (female x2), selectable phantom +48V, selectable attenuator		
	Video ref in, BNC type, 1.0 Vp-p, 75Ω		
	DC 12V in: XLR-4 pin type (male x1)		
	VF out, BNC type, 1.0 Vp-p, 75Ω, switchable to external (SD+HD)		
	2 x BNC, SMPTE 292M, HD-SDI out: 1.5 Gb/s, 0.8 Vp-p, 75Ω		
	Prompter out: BNC type, 1.0 Vp-p, 75Ω		
	Scriptlight DC-out: 3-pin, 0.25A/12V DC		
	Input/output connectors	DC-out: 4-pin Hirose, 1.5A/12V DC and tally indicators	
CCU: triax connector			
Lens: 12-pin			
Viewfinder connector: 20-pin and HDMI connector			
Auxiliary/data 11p private data			
9-pin RS-232			
Tracker: 11-pin			
SmartCard			
	Intercom: XLR 5-pin (female x1)		



SPECIFICATIONS (CONT.)

Connectivity Head and LDK 5880 HD Fiber Adapter

Input connectors	Front mic in: XLR-3-31 type (female x1) balanced, +48V, ch1
	Audio in: XLR-3-31 type (female x2), selectable phantom +48V, selectable attenuator
	Video ref in, BNC type, 1.0 Vp-p, 75Ω
	DC 12V in: XLR-4 pin type (male x1)
Output connectors	VF out, BNC type, 1.0 Vp-p, 75Ω, switchable to external (SD+HD)
	BNC, SMPTE 292M, HD-SDI out: 1.5 Gb/s, 0.8 Vp-p, 75Ω
	Scriptlight DC-out: 3-pin, 0.25A/12V DC
	DC-out: 4-pin Hirose, 1.5A/12V DC and tally indicators
Input/output connectors	CCU: Fiber communication (2x) + Power connection
	Intercom: XLR 5-pin (Female)
	Video ref (in)/Teleprompter (out): BNC type, 1.0 Vp-p, 75Ω
	Auxiliary/data 11p private data
	Tracker: 11-pin
	Serial I/O communication 9 pin RS232
	SmartCard
	Lens: 12-pin
	Viewfinder connector: 20-pin and HDMI connector



ORDERING INFORMATION

Please contact your authorized Grass Valley representative.

[www.grassvalley.com/sales](http://www.grassvalley.com/sales)



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.

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