Annexe A : caméra LDK 4000

grass valley

PRODUCT DATA SHEET

LDK 4000 Elite

SINGLE-FORMAT HD CAMERA

The LDK 4000 Elite is available as either a 720p or 1080i camera head. In each case, its operating frequency is switchable between 50- and 59.94 Hz, enabling it to support a variety of production environments.

SPECIFICATIONS

HD Camera Head	**LDK 4000 Elite**	
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); Storage: -20°C to 60°C (-4°F to 140°F)	
Weight	5.5 kg (11 lbs.) incl. 2" viewfinder and Triax HD adapter	
Dimensions	241 (H) x 164 (W) x 373 (L) mm 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, continuous auto white	
Pickup device	3 x 2/3" 16:9 HD-DPM+ CCDs	
Picture elements	9.2 million pixels 1920 (H) x 4320 (V) effective	
Smear	No vertical smear	
Temporal Frequencies	**LDK 4000 Elite/70**	**LDK 4000 Elite/71**
720p operation	50/59.94 Hz	—
1080i operation	—	50/59.94 Hz
Sensitivity 2000 lux	F10.0 typical	
S/N ratio in Y signal	60 dB typical	
Modulation depth	55% @ 27 MHz (typical 720p59.94)	
Digital quantization/ DSP processing	14 bits A/D, with 34 bits DSP resolution	
Gain	-6 dB to 12 dB in 3 dB steps (user-definable presets)	
Exposure control	Down to 1/1000s	
Clean scanning	50.8 to 125 Hz (at 50 Hz temporal frequency); 61 to 150 Hz (at 59.94 Hz temporal frequency); V-shift	

Annexe B : caméra LDK 3000

grass valley

PRODUCT DATA SHEET

LDK 3000

THE ECONOMICAL CHOICE FOR HIGH-QUALITY HD

To meet the needs of smaller and regional studios and production facilities who need to shoot high-quality high-definition (HD) content on a tight budget, Grass Valley has introduced the LDK 3000 camera series.

The LDK 3000 from Grass Valley™ is the latest addition to the renowned LDK family. This multi-format camera system offers great flexibility and high picture quality combined with a favorable cost of ownership.

With one of the best-known imaging design teams in the world and multiple technical Emmy® Awards, Grass Valley camera products continue to break ground for innovation and creative ideas.

In many regions of the world, there is no standard format for HD production. Others regions have standardized on different formats depending on the application. To support these different needs, we have created a cost-effective multi-format HD acquisition system that supports 1080i50/60 and 720p50/60.

The LDK 3000 has three 2/3-inch, 2.4 million pixels CMOS imagers specially developed for broadcast applications. Many unique features have been designed into these imagers such as DDS—Double Digital Sampling—and dual integrated A/D converters which create high-quality, razor-sharp pictures.

Digital signal processing is done with 34-bit precision. This processing includes all major camera functions such as gamma, knee, contour, and advanced selectable color matrix. A full digital noise reduction system is implemented.

To make images look their best, the LDK 3000 contains powerful colorimetry and color-matching capabilities. It also contains two independent skin-contour circuits. These circuits allow you to select any two color values and adjust contour processing in those areas, thus allowing improvement in the appearance of facial tones or of any selected tone.

KEY FEATURES

- Economic high picture quality HD acquisition:
  - Three 2.4 million pixels CMOS imagers
  - On-chip dual A/D conversion
  - 34-bit digital signal processing
  - Unique DDS – Double Digital Sampling – for improved FPN performance
  - Full digital noise reduction
- Emmy Award-winning dual skin-contour circuit makes talent look its best
- Advanced selectable color matrix
- Unique viewfinder focus-assist tools:
  - Crawler for creating an active edge around all objects in focus
  - Instant push-button electronic zoom for enlarging a subject to focus on fine details
- Full bandwidth triax HD transmission system:
  - Supports standard triax up to 3,900 ft. (1,200m)
  - With triax repeater up to 7,800 ft. (2,400m)

SPECIFICATIONS

HD Camera Head

General

Weight: 5.3 kg (11.11 lbs., incl. 2" VF and head+adapter)

Dimensions (HxWxL, approx.): 241 x 164 x 373 mm (9.5 x 6.5 x 14.7 in.) with triax HD adapter

Operating temperature: -20°C to +45°C (-4°F to +113°F)

Storage temperature: -20°C to +60°C (-4°F to +140°F)

Power: Triax or DC 12V; 40W incl. 2" VF & triax HD adapter

Cable length: Up to 1,200m (3,900 ft.)

Camera

Pickup device: 3 x 2/3" CMOS imagers

Picture elements: 1920 x 1080

Digital processing: 34-bit accurate processing

Lens mount: 2/3" Bayonet type

Optical system: F1.4 prism

Optical filters: Clear, 1/4 ND, 1/16 ND, 1/64ND, 4p star

Exposure: Electronic exposure down to 1/2000 sec

Clean scanning: 50 to 2,000 Hz

Color correction filters: Electronic: 3200, 5600K, 7500K, 2 AWB presets, continuous auto white

Video Mode

Schwitchable1080i/720p

Temporal frequencies: 50/59.94 Hz

Sensitivity: 2000 lux @ F9

S/N ratio: 56 dB (typical), 58 dB (with DNR)

Aspect ratio: 16:9

Gain selection: -6 to +12 dB in 3 dB steps (user-definable presets) or continuous master gain

Modulation depth: 50% (typical) at 800 TV lines (27 MHz) in 1080i/720p/50/59.94 mode

Annexe C : caméra Control System C2IP

C2IP Camera Control System

FLEXIBLE ETHERNET CAMERA CONTROL

The C2IP camera control system offers Ethernet-based TCP/IP control of up to 99 digital Grass Valley LDK series cameras. It features an operational control panel with features normally found in conventional master control panels, and a master control panel that can dramatically speed camera setup and reconfiguration.

Expanding the capabilities of our Grass Valley™ camera line is the C2IP (camera control over IP network) Ethernet-based camera control system. Supporting all digital LDK cameras, it offers Ethernet-based control of up to 99 cameras using standard IP networking for live and multi-camera productions.

The C2IP system offers an operational control panel (OCP), a master control panel (MCP), and a base station data/network module. The C2IP system also provides an easy migration path from our Series 9000 camera control system, including support for the LDK 23HS mk II camera.

For comprehensive camera control, the OCP 400 operational control panel of the C2IP system includes capabilities found only in conventional master control panels, such as variable matrix control, fine skin-detail adjustments, and installation adjustments. It is also one of the smallest control panels available, making it a great fit for mobile productions and studio settings with space restrictions.

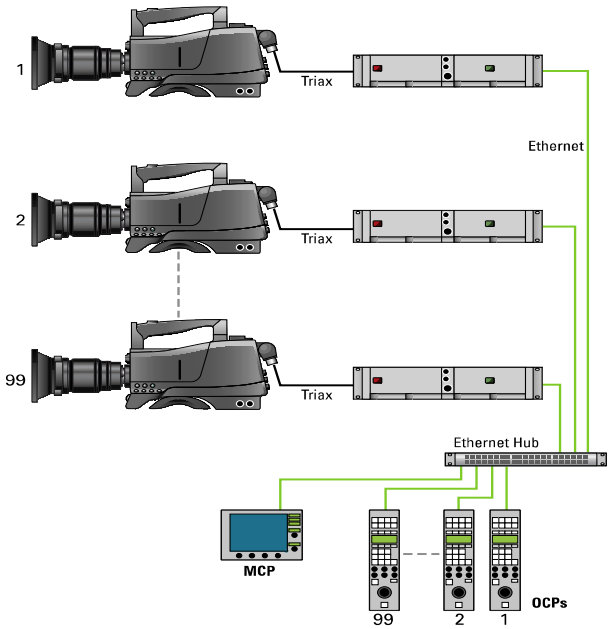
The OCP 400 features plug-and-play Ethernet connectivity, an intuitive interface for easy operation, and pre-illuminated buttons and text-screenings for dim-light environments. It supports all Grass Valley digital LDK series cameras.

The MCP 400 master control panel offers similar high performance, including powerful production features and tools not available with any other camera control system.

KEY FEATURES

- Ethernet-based camera control system
  - Supports 10/100Base-T networks
  - Uses TCP/IP protocol
  - Uses off-the-shelf standard network infrastructure
- Supports all Grass Valley digital LDK series cameras
- Camera control:
  - Multi-camera control supports up to 99 cameras
  - Multi-point control supports multiple control points per camera
- OCP 400 operational control panel:
  - Features capabilities found in conventional master control panels
  - Comfortable, very compact (82 mm wide) design
  - Intuitive interface
  - Hard-style buttons
- MCP 400:
  - Touchscreen interface
  - Automatic data logging of all camera settings
  - Tools for fast reconfiguration/adjustment of camera settings

C2IP CONFIGURATION



Annexe D : caméra LDK 8300

LDK 8300

LIVE SUPER SLOMO CAMERA

In 1998, the LDK 23 camera set the standard in standard-definition super slow-motion (slo-mo). Now, a decade later, Grass Valley is again setting the standard with high-definition super slo-mo with the introduction of the LDK 8300 Live Super SloMo camera. At major sporting events in 2008, athletes scoring goals and winning gold medals were captured with the LDK 8300 and played back in stunning slo-mo for millions of viewers worldwide.

KEY FEATURES

- 1x, 2x, 3x speed selectable
- Multi-format support 720p or 1080i:
  - 1080i50/59.94 (1x)
  - 1080i100/119.88 (2x)
  - 1080i150/179.82 (3x)
  - 720p50/59.94 (1x)
  - 720p100/119.88 (2x)
  - 720p150/179.82 (3x)
- Unique AnyLight anti-flicker feature
- High-quality HD acquisition
- Signal-to-noise ratio for HD broadcast requirements: >57 dB
- Enhanced cooling system
- Robust digital fiber transmission and communication
- High-quality, simultaneous SD output available during HD recording
- Same controls, look, and feel as LDK 8000 Standard and WorldCam cameras
- Supports third-party digital disk device for recording and storing HD images

Camera Control System

High Speed through digital fiber

The HD fiber system allows video transmission at single, double or triple speed and remote control of cameras up to a distance of 4,000 m (13,000 ft) and beyond, using industry standard fiber optic cable. It is based on 30 MHz full-bandwidth 4:2:2 transmission (Y/Cr/Cb components). All video and data signals are transmitted digitally to ensure long cable runs without any loss of quality.

The three HD-SDI phased output connections are used to supply an external harddisk recorder or recording system to obtain exceptional slow motion playback performance. The three HD-SDI phased signals are also combined internally and are output as a standard HD-SDI signal. An HD-SDI monitoring output with menu text overlay is available.

Video output signals

The video signals present on the main video outputs are depending on the selected video mode of the connected camera:

Camera video mode	HD-SDI A connector	HD-SDI B connector	HD-SDI C connector	Live/Effect connector
1080i50/59	1080i50/59.94 SMPTE 292M, @ 1.5 Gbit/s + embedded audio	1080i50/59.94 SMPTE 292M, @ 1.5 Gbit/s	1080i50/59.94 SMPTE 292M, @ 1.5 Gbit/s	1080i50/59.94 SMPTE 292M, @ 1.5 Gbit/s + embedded audio
1080i100/119 (2-speed)	1080i50/59.94 **< phase 1 >** SMPTE 292M, @ 1.5 Gbit/s + embedded audio	1080i50/59.94 **< phase 2 >** SMPTE 292M, @ 1.5 Gbit/s	1080i50/59.94 **< combined >** SMPTE 292M, @ 1.5 Gbit/s	1080i50/59.94 **< combined >** SMPTE 292M, @ 1.5 Gbit/s + embedded audio
1080i150/179 (3-speed)	1080i50/59.94 **< phase 1 >** SMPTE 292M, @ 1.5 Gbit/s + embedded audio	1080i50/59.94 **< phase 2 >** SMPTE 292M, @ 1.5 Gbit/s	1080i50/59.94 **< phase 3 >** SMPTE 292M, @ 1.5 Gbit/s	1080i50/59.94 **< combined >** SMPTE 292M, @ 1.5 Gbit/s + embedded audio
720p50/59	720p50/59.94 SMPTE 292M, @ 1.5 Gbit/s + embedded audio	720p50/59.94 SMPTE 292M, @ 1.5 Gbit/s	720p50/59.94 SMPTE 292M, @ 1.5 Gbit/s	720p50/59.94 SMPTE 292M, @ 1.5 Gbit/s + embedded audio
720p100/119 (2-speed)	720p50/59.94 **< phase 1 >** SMPTE 292M, @ 1.5 Gbit + embedded audio	720p50/59.94 **< phase 2 >** SMPTE 292M, @ 1.5 Gbit/s	720p50/59.94 **< combined >** SMPTE 292M, @ 1.5 Gbit/s	720p50/59.94 **< combined >** SMPTE 292M, @ 1.5 Gbit/s + embedded audio
720p150/179 (3-speed)	720p50/59.94 **< phase 1 >** SMPTE 292M, @ 1.5 Gbit/s + embedded audio	720p50/59.94 **< phase 2 >** SMPTE 292M, @ 1.5 Gbit/s	720p50/59.94 **< phase 3 >** SMPTE 292M, @ 1.5 Gbit/s	720p50/59.94 < **combined >** SMPTE 292M, @ 1.5 Gbit/s + embedded audio

Annexe E : magnétoscope PDW F1600

PDW-F1600
Deck d'enregistrement XDCAM HD422

Spécifications techniques

Informations générales	
Alimentation	100 V à 240 V AC, 50/60 Hz, 12 V CC
Consommation électrique	CA : 80 W, CC : 65 W, Veille (CC) : 55 W
Température d'utilisation	De +5 à 40 °C
Température de stockage	De -20 à +60 °C
Humidité	De 25 à 90 % (humidité relative)
Poids	6,5 kg
Dimensions (L x H x P sans les parties saillantes)	210 x 132 x 396 mm
Format d'enregistrement/de lecture	Vidéo : MPEG HD422 (CBR : 50 Mbits/s) MPEG HD : mode HQ (débit variable, débit binaire maximal : 35 Mbits/s) mode SP (débit constant, 25 Mbits/s) mode LP (débit variable, débit binaire maximal : 18 Mbits/s) (lecture unique-ment), MPEG IMX (débit constant, 50/40/30 Mbits/s) DVCAM (débit constant, 25 Mbits/s) Proxy Vidéo : MPEG-4 Audio : MPEG HD422 : 8 ch/24 bits/ 48 kHz MPEG HD: 4 ch/16 bits/ 48 kHz MPEG IMX : 4 ch/24 bits/ 48 kHz ou 8 ch/16 bits/ 48 kHz DVCAM : 4 ch/16 bits/ 48 kHz Proxy Audio : loi A (8 ch/8 bits/8 kHz)

Performances vidéo	
Fréquence d'échantillonnage	Y : 74,25 MHz, Pb/Pr : 37,125 MHz
Quantification	8 bits/échantillon
Correction d'erreurs	Code Reed-Solomon

Réglages processeur	
Niveau vidéo	De -l'infini à +3 dB
Niveau de couleur	De -l'infini à +3 dB
Niveau de configuration/ des noirs	± 30 IRE/±210 mV
Phase couleur	± 30°
Phase de synchro du système	± 15 us
Phase de synchro du système (précise)	De 0 à 400 ns
Phase SC système	De 0 à 400 ns

Performances audio	
Fréquence d'échantillonnage	48 KHz
Quantification	24 bits
Réponse en fréquence	20 Hz à 20 kHz +0,5/-1,0 dB (0 dB à 1 kHz)
Plage dynamique	Plus de 90 dB
Distorsion	Inférieure à 0,05 % (1 kHz)
Réserve dynamique	20/18/16/12 dB (sélectionnable)

Entrées/Sorties	
Sortie casque	Jack stéréo JM-60 x 1, -13 dBu, 8 Ω, asymétrique
Sortie timecode	BNC x 1, timecode SMPTE, 1,0 Vc-c/75 Ω/asymétrique
Contrôle vidéo	Sub-D 9 broches (femelle) x 1, EIA RS-423
i LINK	IEEE 1394 6 broches x 1*, File Access Mode, (Option : PDBK-201) HDV 1080i/720P IN/OUT *Flux AV/C (DV) NON pris en charge.
Ethernet	RJ-45 x 1, 1000Base-T : IEEE802.3ab, 100Base-TX : IEEE802.3u, 10Base-T : IEEE802.5
Entrée Remote (9P)	sub-D 9 broches (femelle) x 1
Entrée CC (12 V)	XLR 4 broches femelle x 1
Sortie CC (12 V)	4 broches (femelle) x 1, CC 12 V, 7,5 W
Maintenance	USB x 2
Entrée AC	x1, 100 à 240 V, 50/60 Hz
Entrée de référence	BNC x 2 (avec boucle itérat-ive) synchro niveau triple HD (0,6 Vc-c/75 Ω/négative) ou Black Burst ou synchro composite SD (0,286 Vc-c/ 75 Ω/négative)
Entrée HD SDI	BNC x 1 (commutable HD/SD) HD-SDI : SMPTE 292M (avec audio intégré) SD-SDI : SMPTE 259M (avec audio intégré)
Entrée audio analogique	XLR 3 broches (femelle) x 2 (canal sélectionnable) +4/0/-3/-6 dBu (sélectionnable) 10 kΩ, symétrique
Sortie audio numérique (AES/EBU)	BNC x 2, 4 canaux (2 canaux chacun, 1/2 et 3/4), AES-3id-1995
Entrée timecode	BNC x 1, timecode SMPTE, 0,5 à 18 Vc-c/3,3 kΩ/ asymétrique
Sortie composite analogique	BNC x 2 1 : 1,0 Vc-c/75 ohms/négat-ive, SMPTE 170M 2 : 1,0 Vc-c/75 Ω/négative, SMPTE 170M, activation/ désactivation des caractères
Sortie HD SDI	BNC x 2, 1 : SMPTE 292M (avec audio intégrée) 2 : SMPTE 292M (avec audio intégrée), activation/dés-activation des caractères
Sortie SD SDI	BNC x 2, 1 : SMPTE 259M (avec audio intégrée) 2 : SMPTE 259M (avec audio intégrée), activation/dés-activation des caractères
Sortie audio analogique	XLR 3 broches (mâle) x 2 (canal sélectionnable), +4/ 0/-3/-6 dBu (sélectionnable), 600 Ω, Lo-Z, symétrique
Moniteur audio analogique	XLR 3 broches (mâle) x 2, +4 dBu, 600 Ω, Lo-Z, symétrique
Sortie audio numérique (AES/EBU)	BNC x 2, 4 canaux (2 canaux chacun, 1/2 et 3/4), AES-3id-1995