

LDK 400

*Affordable, Pristine
14-bit SD Acquisition*

Grass Valley™ products from Thomson offer the most comprehensive multi-format solutions for acquisition, production, storage and playback—and a strong foundation for centralized, proactive status and activity monitoring.

These solutions include one of the broadest selections of standard-definition and high-definition digital video cameras.

With one of the best known imaging design teams in the world and six technical and engineering Emmy® awards for camera-related technologies, Grass Valley camera products continue to break ground for innovative and creative ideas.

Thomson continues to bring superior digital acquisition to a broad range of broadcast applications with the introduction of the Grass Valley LDK 400 14-Bit SD Camera, designed for broadcasters that require pristine image quality in standard definition.

14-bit Conversion

The LDK 400 uses 14-bit analog-digital conversion, providing four times as many levels from each sensor as in a 12-bit camera. This ensures that even the most subtle graduations in tone can be captured and passed on to the digital signal processing (DSP). Two specialized ASICs process the signals using 22 bits at 18 MHz and 36 MHz, delivering a typical signal to noise performance of 65 dB.



Digital Signal Processing

All camera adjustments are made in the digital signal domain, giving complete repeatability. Parameters available include: highlight handling, contrast and gamma control with preset and variable gamma settings, variable matrix for colorimetry adjustments, flare, white/black shading, leaking pixel concealment, gain, and contour.

The contour processing operates in five bands and also includes dual skin-tone circuits. These can work on automatically detected colors and be used to apply separate levels of contour to each. Although the most common use is for skin-tones, the circuits are not limited to those colors.

A further example of the flexibility offered by the DSP in the LDK 400 is in the gain controls. User-defined preset gains can be set from -6 dB to +48 dB in steps of 3 dB. Additionally there is a variable stepless master gain with an adjustment range of -6 dB to +17.9 dB.

key features

- Compact design based on popular LDK 300 camera
- 14-bit A-D conversion, >22-bit processing
- High sensitivity: F14 / 2000 lux
- Excellent signal-noise ratio: 65 dB typical
- Switchable 16:9 / 4:3 for flexibility
- Three remote controlled filters
 - NDs, optical effects, electronic color correction
- Dual skin tone circuits
- Unique operational features
 - Optional handgrip zoom control
 - Wide angle viewfinder adapter
 - Adjustable orthopaedic shoulderpad
- Compatible with a range of Grass Valley systems:
 - Analog Triax system
 - Digital Triax system
 - Digital Wireless Triax system
 - DigiLink system
- Full studio functionality using LDK 5430 triax adapter
 - Teleprompter with power
 - Reverse teleprompter
 - Dual return video
 - Tracker communications
- Use with SuperXpander enables configuration with studio lenses and accessories



Three Levels of Filters

The LDK 400 has either one or two motorized filter wheels. The first (standard) wheel contains neutral density filters, while the second (optional) wheel has effects filters: 4-point and 6-point star plus soft focus.

Color correction filters are all electronic with presets for 3200°K, 4700°K, 5600°K, and 7200°K. Additionally there is a variable color temperature control with a range of 2200°K to 7500°K in 100°K steps, there are also two autowhite presets, plus a setting for fluorescent light and continuous autowhite.

LDK 400 Sensors

The LDK 400 is available either switchable 16:9 / 4:3 or 4:3 only. In either case, the ultra-low smear IT sensors feature a high sensitivity of F14 at 2000 lux, enabling exceptional results to be obtained in low-light and high-contrast situations.

The LDK 400 System

As with other Grass Valley LDK cameras, the LDK 400 is a compact and lightweight docking design, based on a camera body renowned for its robustness and ergonomic design. This makes the camera suitable for a very wide range of applications from simple hand-held configurations up to full studio features and facilities.

Docking adapters mean the LDK 400 is part of a futureproof system. Currently adapters are available for analog or digital triax, digital multicore, or wireless operation. With these adapters the camera can be readily changed from hand-held to studio operation.

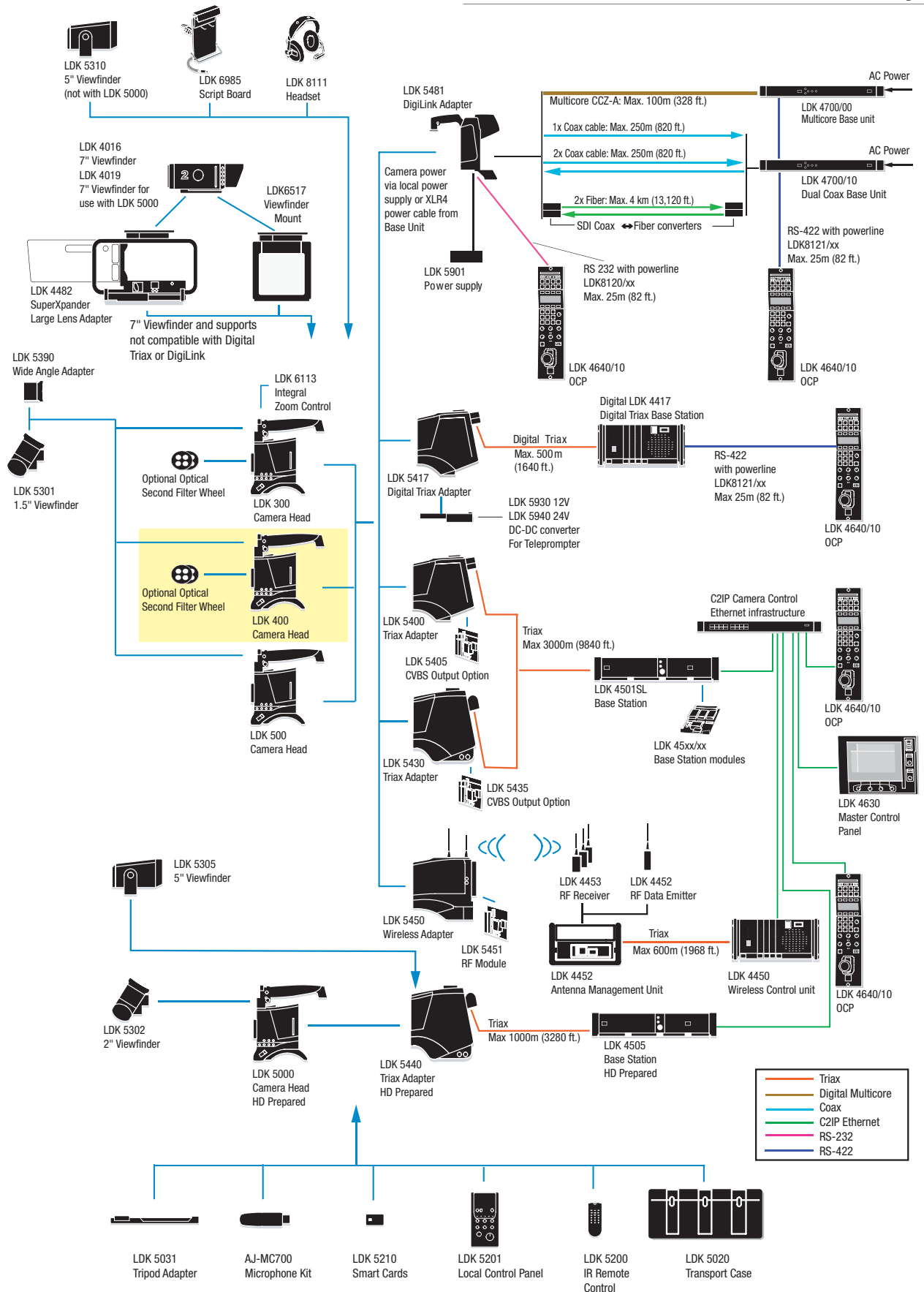


The camera can be mounted in a SuperXpander large lens adaptor with a high resolution 7" viewfinder, or be used with 5" or 1.5" viewfinders. Facilities depend on the adapter in use, and a full studio system can include teleprompter video and power, private data channel, return video channels, and of course a full intercom system.

In hand-held operation, the camera is ergonomically well balanced and options such as the built-in handgrip zoom control, wide-angle viewfinder adapter, and rotary triax connector make it easy for the operator to reach difficult low-level shots.



SD Camera Family



Transmission Options

Adapter Model	LDK 5480/5481 Multicore	LDK 5481 DigiLink	LDK 5417 Digital triax	LDK 5400 Triax	LDK 5430 Enhanced Triax	LDK 5450 Wireless Triax
Maximum Cable Length ^{*1}	100m (328 ft.)	Dual coax 250m (820 ft.)	11 mm triax 500m (1,640 ft.)	14 mm triax 3 km (9,840 ft.)	14 mm triax 3 km (9,840 ft.)	11 mm triax 600m (1,968 ft.) base unit to antennae
		Dual fiber 4 km (13,120 ft.)	8 mm triax 250m (820 ft.)	11 mm triax 2 km (6,560 ft.)	11 mm triax 2 km (6,560 ft.)	
				8 mm triax 1.5 km (4,920 ft.)	8 mm triax 1.5 km (4,920 ft.)	150m (492 ft.) wireless range
I/O at camera head						
Front microphone in	✓	✓	✓	✓	✓	✓
Viewfinder	✓	✓	✓	✓	✓	
Lens	✓	✓	✓	✓	✓	✓
RS-232 control	✓	✓	✓	✓	✓	✓
I/O at camera adapter						
Rear microphone in			✓	✓	✓ x2	✓
Intercom headset	✓	✓	✓	✓	✓	✓
CVBS out	✓	✓		✓ ^{*6}	✓ ^{*6}	
SDI out	✓	✓				✓
Teleprompt out		✓	✓		✓	
Viewfinder (monitoring) out	✓	✓	✓	✓	✓	✓
External video out		✓	✓	✓	✓	
Ref in (Genlock)	✓ ^{*2}	✓		✓ ^{*6}	✓ ^{*6}	
DC power in	✓	✓		✓	✓	✓
Utility DC power out	✓	✓	✓	✓	✓	✓
Script light power out	✓	✓	✓	✓	✓	
Tally out					✓	
Tracker connector					✓	
Private data				✓	✓	
Triax connector			✓	✓	✓	
Fiber connector		optional				
Multicore 26P EBU N21	✓					
Coax operation		✓				
I/O at Base Station	LDK 4700	LDK 4700	LDK 4417	LDK 4501	LDK 4501	LDK 4450
Power requirement	AC Mains	AC Mains	AC Mains	AC Mains	AC Mains	AC Mains
Audio 1 out	✓	✓	✓	✓	✓	✓
Audio 2 out					✓	✓
Intercom	✓	✓	✓	✓	✓	✓
Control bus RS-422	✓	✓	✓			
Control bus C2IP				✓	✓	✓
Control bus Series 9000				✓	✓	
SDI out	✓ x2	✓ x2	✓ x3	✓ x6	✓ x6	✓ x3
YUV out	✓	✓ ^{*4}		✓	✓ ^{*5}	
RGB out		✓ ^{*4}			^{*5}	
CVBS out	✓ x2	✓ x2	✓ x2	✓	✓	
Teleprompter in	✓+loop-thru	✓+loop-thru	✓+loop-thru ^{*3}	✓+loop-thru	✓+loop-thru	
External video 1 in	✓+loop-thru	✓+loop-thru	✓+loop-thru	✓+loop-thru	✓+loop-thru	
External video 2 in			✓+loop-thru ^{*3}		✓+loop-thru	
Ref in	✓+loop-thru	✓+loop-thru	✓+loop-thru	✓+loop-thru	✓+loop-thru	✓+loop-thru
Monitoring out				✓	✓	
Private Data				✓	✓	

^{*1} Maximum triax cable lengths specified using Nokia cable. Coax cable lengths using Belden 1694A or equivalent.

^{*2} Reference In via Multicore

^{*3} Either External 2 or teleprompter is available

^{*4} Either YUV or RGB available

^{*5} Either YUV, RGB or 3x CVBS available

^{*6} With optional encoder board

Specifications

Camera	LDK 400	
Power requirements	Triax or DC 12V	
Power consumption	12W excluding viewfinder & triax 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)	
Weight	2.1 kg (4.6 lbs.) not incl. viewfinder & triax adapter 5.0 kg (11 lbs.) incl. 1.5" viewfinder & triax adapter	
Dimensions	214 mm (H) x 125 mm (W) x 241 mm (L) with compact adapter 205 mm (H) x 125 mm (W) x 357 mm (L) with triax adapter	
Optical system	F1.4 prism	
Optical filter wheels	1x or (optional) 2x motorized filter wheels	
Optical filters on first wheel	Clear, 1/4 ND, 1/16 ND, 1/64 ND	
Optical filters on second wheel	Clear, 4-point star, 6-point star, soft focus	
Color correction filters	Electronic 3200°K, 5600°K, 7500°K, FL, 2 AWB presets, continuous auto-white, variable color temperature: 2200°K to 7500°K in 100°K steps	
Pickup device number & size	3 x 2/3" CCDs	
Pickup device	ITW	IT
Picture elements (H x V)		
PAL 16:9	1008 x 591	N/A
PAL 4:3	756 x 591	756 x 591
NTSC 16:9	1020 x 505	N/A
NTSC 4:3	765 x 505	765 x 505
Resolution in 16:9 4:3	800 TV lines 800 TV lines	N/A 750 TV lines
Smear	-140 dB (typical)	
Sensitivity 2000 lux	F14	
S/N ratio (typical) PAL NTSC	63 dB in studio mode 65 dB in studio mode	
Vertical resolution	480 lines (PAL), 400 lines (NTSC)	
Modulation depth	70% @ 5 MHz (typical)	
Digital quantization	14 bits A to D	
Digital signal processing	>22 bits, 18 MHz & 36 MHz	
Gain	-6 dB to +42 dB in 3 dB steps (user-defined presets)	
Variable master gain	-6 dB to +17.9 dB stepless	
Exposure control	Down to 1/2000 sec	
Clean scanning PAL NTSC	51 to 103 Hz 61 to 151 Hz	
Memory Card	Smart card, store & recall scene, & operator files	
Inputs/Outputs at camera		
Front microphone input	XLR-3 female, balanced +48V selectable	
Lens connector	12-pin	
Control input	9-pin RS-232-C compatible	
Viewfinder connector	20-pin	
Supplied accessories	Operator's manual Camera rain cover 1 x owner card 2 x User cards Shoulder strap	
Optional viewfinder 1.5" viewfinder	Model No. LDK 5301	
Resolution	CRT >600 TV lines (center)	



Ordering Information

Please contact your authorized Grass Valley representative.

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- Critical Spares Kits for Most Products

For specific requests, our worldwide experienced Support Services & Training experts can build and assist you with customized solutions.

For more information contact your authorized Grass Valley representative or visit us online at www.thomsongrassvalley.com/support.

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