

LDK 6200 HD

World's First HD Super SloMo Camera



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.

Since the introduction of the LDK 23HS in 1998, the use of super slow motion cameras in sporting events has become commonplace. By capturing images at higher speeds and then slowing them down for playback, the viewer is able to experience the full drama and emotion of the moment.

Until now, the only way to achieve this effect in high-definition (HD) broadcasts has been to use standard-definition (SD) high-speed cameras and up-convert the pictures, with a resulting visible change in picture quality for slow motion inserts. The LDK 6200 HD provides this missing link in the HD sports production chain.

The LDK 6200 HD utilizes the same controls, look, and feel as the existing range of LDK HD cameras, making it familiar to operators while providing the same high picture quality to viewers.

Like the LDK 6000 mk II, the LDK 6200 HD is based on the Emmy® award-winning High Definition Dynamic Pixel Management (HD DPM+™) sensor technology. This technology uses sensors with 9.2 million pixels to capture different formats directly.

Maintaining flexibility for mobile productions, particularly sporting events, the LDK 6200 HD uses the same triax or fiber optic

cable as other LDK series cameras. Triax cable can be used for distances up to 1000m (3,300 feet), which can be doubled by use of an HDTV triax repeater without significant loss of picture quality.

As a super slo-mo camera, the LDK 6200 HD captures images at 2x speed, either 100 Hz or 119.88 Hz and supports the use of an external third-party disk recorder. During recording, a simultaneous high quality SD output is also available.

You can also use the LDK 6200 HD as a single-speed camera that functions standard LDK 6000 mk II at 720p or 1080i at 50/59.94 Hz.

The LDK 6200 HD is a remarkably lightweight camera with a well-balanced ergonomic design that ensures comfortable hand-held operation with maximum freedom of movement. An optional zoom control integrated into the handgrip and the rotary triax connector makes it easier to capture difficult low-level shoots. Alternatively, you can mount the camera in a SuperXpander large lens adapter with a 7-inch HD viewfinder. Other accessories are also available.

System Integration

In high-speed mode, the LDK 6200 HD system is fully compatible with studio production facilities and utilizes the same operational control panels as other Grass Valley LDK series cameras using the Grass Valley C2IP camera control system.

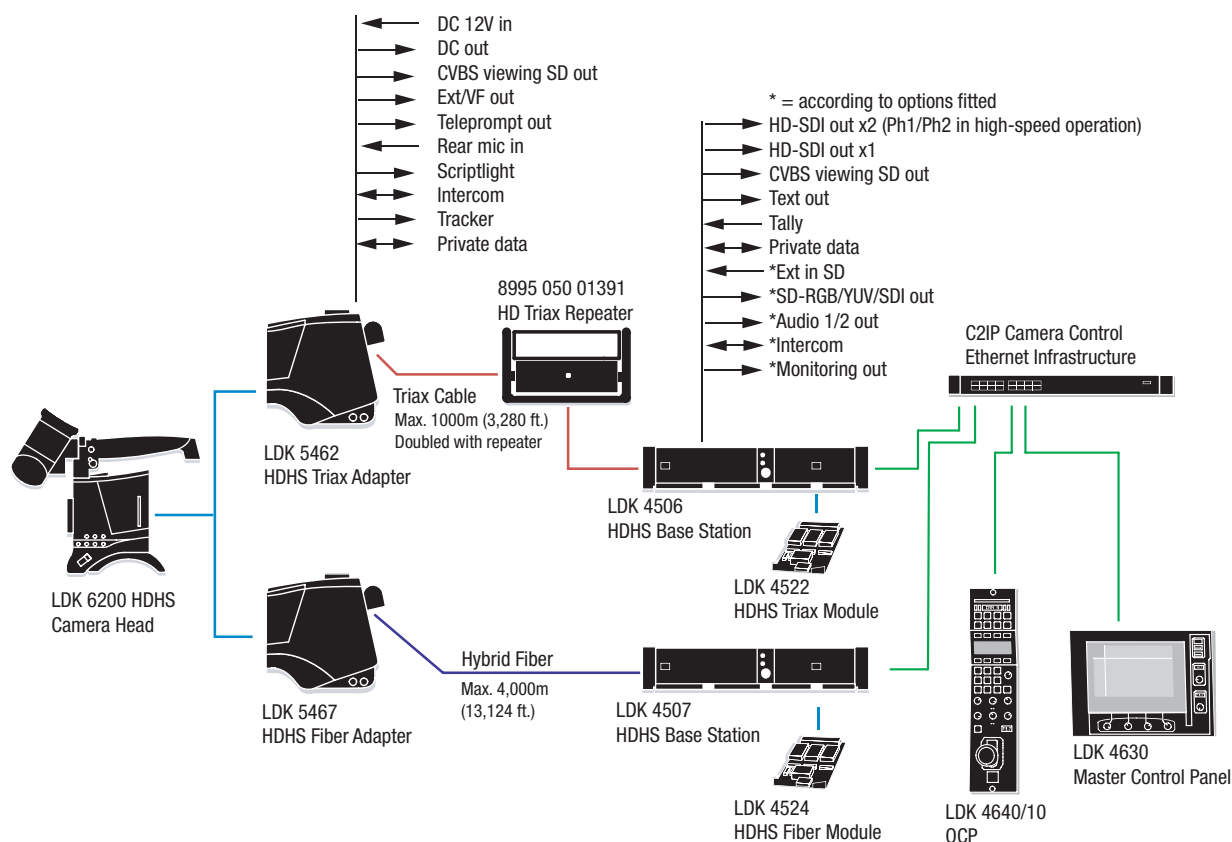
key features

- World's first HD Super SloMo camera
- Multi-format support
- Incredible detail from native HD acquisition
- Digital signal processing uses 12-bit A-D conversion
- Same controls, look, and feel of today's Grass Valley LDK cameras
- One-button switch to LDK 6000 mk II standard operation
- Supports HD triax and hybrid fiber signal transmission
- Supports third-party digital disk device for recording, storing HD images
- Camera system includes
 - LDK 6200 HD camera head
 - Base station processor
 - Triax or fiber adapter
 - Camera accessories (i.e., multiple viewfinders and SuperXpander unit)

The C2IP control system supports the simple connection of all elements of camera control using standard Ethernet components. You can connect up to 99 cameras in a single system, enabling the sharing of control-room facilities and centralized operations. All cameras operate from the same type of operational control panel (OCP) or master control panel (MCP) and you can easily transfer the settings between cameras.

When used in standard (single-speed) mode, the LDK 6200 HD can be connected to an LDK 6000 mk II base station if required; conversely, the LDK 6000 mk II can run on the LDK 6200 base station. This compatibility eliminates the need for additional equipment while maintaining the flexibility required in mobile productions.

LDK 6200 HD System



Base Station

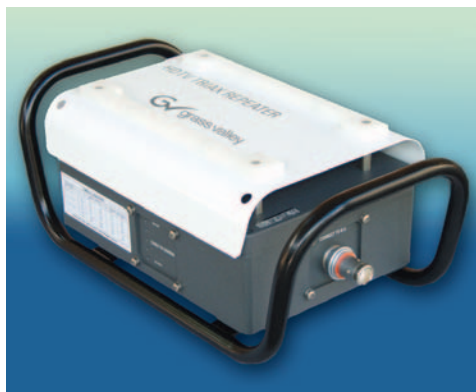
The LDK 6200 base station also supports the LDK 6000 mk II standard camera. Conversely, you can connect a LDK 6200 HD running in single-speed mode to an LDK 6000 mk II base station.

C2IP Panel

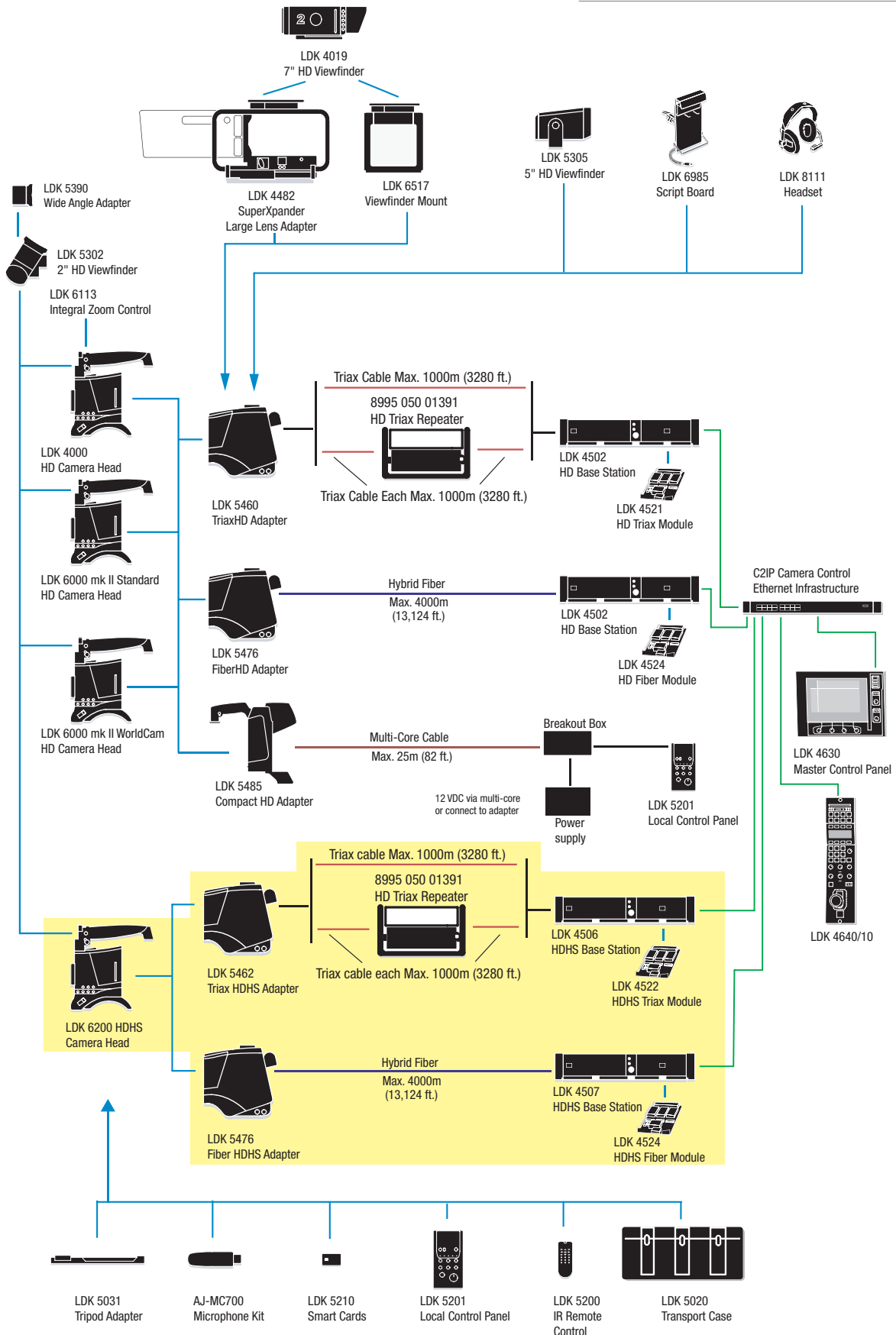
The C2IP camera control system features an operational control panel with features normally found in conventional master control panels—and a master control panel that can dramatically speed camera setup and reconfiguration.

HD Triax Repeater

This repeater can transmit HD signals over triax cable up to 6,600 feet (2,000 meters) without a significant loss of signal quality. It comes in a weather-proof metal box for rugged outdoor use.



HD Camera Family



Specifications

HDHS Camera Head	LDK 6200 HD	
General		
Power	Triax or DC 12V; 44W incl 2" viewfinder & TriaxHD 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	4.3 kg (9.6 lbs.) incl. 2" viewfinder and compact adapter; 5.0 kg (11 lbs.) incl. 2" viewfinder and TriaxHD adapter	
Dimensions (mm)	214 (H) x 125 (W) x 241 (L) with compact adapter; 205 (H) x 125 (W) x 357 (L) with TriaxHD 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, 4-point star, 6-point star, soft focus	
Color correction filters	Electronic: 3200°K, 5600°K, 7500°K, FL, 2 AWB presets, continuous autowhite	
Pickup device	3 x 2/3" HD-DPM+ double-speed CCDs	
Picture elements	9.2 million pixels 1920 (H) x 4320 (V) effective	
Smear	No vertical smear	
Line standard	Switchable 720p/1080i	
Aspect ratio	16:9	
	Single-speed operation	Double-speed operation
Temporal frequencies	50/59.94 Hz	100/119.88 Hz
Sensitivity 2000 lux	F8.0 typical (1080i/59.94 mode)	F5.6 typical (1080i/119.88 mode)
S/N ratio in Y signal	55 dB typical	55 dB typical
Modulation depth	55% @ 27 MHz (typical 720p 59.94)	50% @ 14 MHz (typical 720p 119.88)
Digital quantisation/processing	12 bits A/D and > 22 bits processing power	
Gain	-6 dB to 12 dB in 3 dB steps (user-definable presets)	
Exposure control	Down to 1/2000s	
Clean scanning (single speed)	50.8 to 125 Hz (at 50 Hz temporal frequency); 61 to 150 Hz (at 59.94 Hz temporal frequency)	
Front microphone input	XLR-3 female, balanced +48V selectable	
Lens connector	12-pin	
Control input	9-pin RS-232C compatible	
Viewfinder connector	20-pin	
Supplied accessories	Operator's manual; camera rain cover; 1x owner card; 2x user cards; shoulder strap	
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 4019	CRT >800 TV lines (center). Req. additional mounting hardware
Triax HDHS Adapter	Model No. LDK 5462	
Triax connector	Fisher /00, Trilock /50, ARD /05, Lemo4E /10, Lemo3T /15, LemoBBC /40	
Video out	1x BNC. CVBS, 1.0 Vp-p, 75Ω, NTSC or PAL viewing quality only	
Monitor out	1x BNC viewfinder Y signal or external video. 1.0 Vp-p, 75Ω	
Teleprompter out	1x BNC 1.0 Vp-p 75Ω	
DC 12V in	XLR-4 male	
DC 12V out	4-pin Hirose. 12V 1.5A and tally indication	
Rear microphone in x2	2 x XLR-3 female, balanced +48V selectable	
Scriptlight connector	Fisher 3-pin 12V 0.25A	
Tracker	Fisher 11-pin communications and signaling	
Auxiliary & data	Fisher 11-pin private data	
Intercom	XLR-5 female ENG/PROD/PGM channels	
Fiber HDHS Adapter	Model No. LDK 5476/20	
Fiber connector	Hybrid acc. SMPTE 304 standard	
Video out	1x BNC CVBS, 1.0 Vp-p, 75Ω, NTSC or PAL viewing quality only	
Monitor out	1x BNC viewfinder Y signal or external video. 1.0 Vp-p, 75Ω	
Teleprompter out	1x BNC 1.0 Vp-p 75Ω	
DC 12V in	XLR-4 male	
DC 12V out	4-pin Hirose. 12V 1.5A and tally indication	
Rear microphone in x2	2 x XLR-3 female, balanced +48V selectable	
Scriptlight connector	Fisher 3-pin 12V 0.25A	
Tracker	Fisher 11-pin communications and signaling	
Auxiliary & data	Fisher 11-pin private data	
Intercom	XLR-5 female ENG/PROD/PGM channels	

Specifications (Cont.)

HDHS Base Station	LDK 4506 Triax; LDK 4507 Fiber	
General	Dimensions (WxHxD)	438 (19" rack) x 88 (2U) x 510 mm (17.2 x 3.5 x 20.1 in.)
	Operating temperature	-20°C to +50°C (-4°F to 122°F)
	Storage temperature	-40°C to +70°C (-40°F to 158°F)
	Operating humidity	Max. 90% (non-condensing)
	Shock resistance	Max.10G (transport), Max. 2G (operating)
	Altitude	Max. 50,000 ft.
	Weight	17.0 kg (37.5 lbs.) fully equipped with options
	Transmission	Typical. cable length
Connectors	Teleprompter in	BNC 1x (and loop-through output), 1.0 Vp-p, 75Ω
	Reference in	BNC 1x (and loop-through output), 1.0 Vp-p, 75Ω D tri-level sync or SD Black Burst
	Single-speed mode HD-SDI out	BNC 3x, 0.8 Vp-p, 75Ω, SMPTE 292M, 1080i/720p at 59.94/50 Hz
	High-speed mode HD-SDI out	PH1,2: BNC 2x, 0.8 Vp-p, 75Ω, SMPTE 292M, 1080i/720p at 59.94/50 Hz; Interpolated PH1+2: BNC 1x, 0.8 Vp-p, 75Ω, SMPTE 292M, 1080i/720p at 59.94/50 Hz
	Text out	BNC 1x, 1.0 Vp-p, 75Ω (VBS)
	Composite video out	BNC 1x, 1.0 Vp-p, 75Ω (CVBS, w/ or w/o text, for viewing purposes)
	Signaling in/out	D-sub 15-pin, male; Preview, Green tally (call), dry contact; Yellow tally (ISO), dry contact; Red tally (on-air), dry contact; Remote audio level control (22-64 dB), DC
	Auxiliary in/out	D-sub 9-pin, female; An0, 0-5 VDC in, output on camera head; An1, 0-5 VDC in; 16:9 < 0.8 VDC in, 4:3 > 2.4 VDC in; Private data in/out, 2.4 kB TTL (RS-232)
	RS-232	D-sub 9-pin, male (RXD, TXD, DTR, DSR, RTS, CTS)
	Control data	4-pin, male (2-wire camera control bus)
	Ethernet	RJ-45 connector for C2IP camera control
Optional Modules		
Power module	LDK 4510/xx	/10 for HDHS Triax BS LDK 4506; /40 for HDHS Fiber BS LDK 4507
	Power requirement	AC 115V/230V ±15%, 47 to 63 Hz
	Power connector	IEC type, 3-pin male
	Power consumption	470 VA or 270 Watts max. with studio head; 360 VA or 210 Watts max. with port. head
Triax module	LDK 4522/xx	Fischer /10; Tri-Lock /20; ARD /30; Lemo4E /40; LemoBBC /50; Lemo3T /60
Fiber module	LDK 4524/20	Lemo Hybrid Fiber connector acc. SMPTE 304
External video	LDK 4530/xx	Analog Input module /10; Digital/Analog (switchable) /40
	Analog in/out	BNC 2x, 1.0 Vp-p, 75Ω (loop-through) (C)VBS
	SDI in	BNC 2x, 0.8 Vp-p, 75Ω SMPTE 259M, ITU-R, BT.601 OR
SDTV output for HD module	LDK 4531/20	
	SDI out	BNC 3x, 0.8 Vp-p, 75Ω, SMPTE 259M, ITU-R, BT.601
	Analog out	BNC 3x, R, G, B or Y, Pr, Pb, or 3x CVBS (menu selection) RGB /Y,Pr,Pb out: 3x 0.7 Vp-p, 75Ω; CVBS out: 3x 1.0 Vp-p, 75Ω
	Frequency response	0.1 to 5.75 MHz (+0.5 dB/-1 dB)
	K factor	Less than 2%
2 ch. audio & 2/4-wire intercom	LDK 4540/10	
	Audio out	XLR- 3 2x, 0/+6 dBu (±1.5 dB, max. 18 dBu, 600Ω, Gain max. 70 dB)
	Frequency response	40 Hz to 15 kHz, (+1/-3 dB, 1 kHz, -10 dBu output level)
	Distortion	Less than 0.5% (100 Hz/1 kHz, +6 dBu out, 600Ω)
	S/N ratio	58 dB (unweighted RMS)
	Intercom in/out	D-sub 15-pin, female (program in, production in/out, engineering in/out) in: 0 or 6 dBu (max. 6 or 12 dBu); out: 0 or 6 dBu (±2 dB, max. 12 dBu)
	Frequency response	150 Hz to 6 kHz (1 kHz, -10 dBu output level)
	Distortion	Less than 2% (1 kHz, +12 dBu level)
Engineering intercom	LDK 4541/xx	XLR-5 (female) /10; Tuchel 6-pin /20; Tuchel 5-pin /30; XLR7(female) /40
	Intercom out	6 dBu, ±2 dB, max. 12 dBu, 25-400Ω
	Frequency response	150 Hz to 6 kHz, ±3 dB (0 dB, 1 kHz, -10 dBu output level)
	S/N ratio	46 dB (unweighted RMS)
	Phantom power	+12 VDC (±1V), menu selectable
Monitoring	LDK 4560/20	
	PXM video out, WFM video out	BNC 2x, 1.0 Vp-p, 75Ω, SMPTE 274M or SMPTE 296M (depending on acquisition format); R, G, B, or Y (menu selection) with HD tri-level SYNC
	Analog HDTV out	VGA-type D-connector, 15-pin, female, with R, G, B, H-sync and V-sync



Ordering Information

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