LDX 100 Camera

Introducing LDX 100: Premium Live Production

A new native IP camera platform with 3X UHD high speed that perfectly answers the needs of live sports production.

Designed to reveal in detail the intensity and emotion behind fast-paced action and split-second decisions, LDX 100 cameras use a new 2/3-inch Titan imager to capture Ultra High Definition (UHD) High Dynamic Range (HDR) images at 3X high speed. That's a lot of "high" functionality in one description, but that's what you should expect from Grass Valley's new flagship camera platform.

Just as compelling as its image capture capabilities is the camera's redefinition of signal distribution. Born a network native, the camera is a self-contained IP endpoint with up to 100 Gb/s IP network connections for audio, video, and control directly at the camera head that enable distribution of camera sources wherever they are needed on the network — without the delays inherent in sending signals to a separate control hub.

New topologies are possible for signal acquisition and distribution. LDX 100 eliminates the requirement for traditional SDI interconnects, thereby enabling a high level of distribution flexibility including true REMI integration that requires less bandwidth because only the needed signals are transmitted. Efficiency also goes up as multiple creative teams have immediate, non-conflicting access to all camera sources wherever it's best for them to work. Collaborative production has never been easier.

LDX 100 cameras offer feature sets that everyone on the team will appreciate.

For the Production Team

Production tools for the new formats of premium content have been limited by the available bandwidth and processing capability. In particular, high-speed capture of images for 4K and higher UHD super slo-mo is not available in traditional cameras. LDX 100 cameras break those barriers with up to 3X high-speed UHD image capture from the same camera — in a single cable — directly from the camera head.

With LDX 100 you can capture all the detail that wasn't seen in the heat of the moment at unsurpassed resolution. Three Titan UHD imagers provide superior resolution and color reproduction. In addition, support for HDR maintains all the high-contrast detail in the image. So for the audience, it's an inside view into the action that they couldn't obtain in any other way.

Wide color gamut combined with the extensive freedom of Grass Valley's Creative Grading control allows camera shaders to easily create a uniquely branded look and apply it across all the cameras on the network for a signature production that captivates the audience. TDs will also love the on-board GPS that enables a faster response time by intuitively seeing the physical location of a camera, not just its IP address.

Camera operators will love the fast boot time and at-a-glance status indicators that allow them to get right to work, including onboard diagnostics that provide immediate feedback to know at all times that you're good to go. Viewfinder menus provide confidence on resolution and frame rate settings. The function-centric menus provides quick, logical access to camera settings and are grouped so that operators can safely change settings without accidentally affecting other parameters while on-air. LDX 100 provides a secure user environment that enables operators to work with confidence — even without extensive training.

But just capturing the image isn't enough. Today's environments require multiple unique content variants from a single production. LDX 100 cameras simplify creation of multiple formats with NativeIP connections directly into the network. Proven standards-based IP makes it simple to connect, convert resolution, map HDR and use however needed across the network. LDX 100 makes collaboration a functional model. Whether working locally or remotely, every creative team immediately has access to the sources they need for their parts of the production.

KEY FEATURES

- New camera platform designed for extension into the future
- UHD HDR images at 3X high-speed
- Simple, scalable multiformat image capture and distribution
- All-in-one camera with no separate base station required thanks to NativeIP
- Fastest time to deploy and configure

- Extensive operator training not required
- At-a-glance settings and diagnostics for immediate status recognition
- Software update and reconfiguration of licenses and settings (if required) in less than 7 minutes
- Field-tested rugged and reliable

- Suite of inventory management features
- Quickly align camera configuration to production requirements for superior cost management
- Field-replaceable SFP/QSFP
- Save time by managing camera information and licenses from the LDX Scanner app without powering up the camera

For Engineers

The number and variety of inputs and outputs for a live production continues to grow. It's the most valuable content available so everyone wants a piece of it. Unfortunately, production budgets haven't expanded at the same pace. Fortunately, Grass Valley has a solution.

Offering a significant reduction in configuration and operational complexity, LDX 100 cameras allow you to quickly set up either on-site or REMI configurations so that you can focus on other issues. No XCU or cradle is required, eliminating the 2 RU of rack space and weight per camera that is required for other systems. LDX 100 is a native IP camera that doesn't rely on extra equipment to manage the communications. Instead, the camera itself is the active IP endpoint in the network. We call this NativeIP. NativeIP allows you to add a camera to your production system from wherever a network connection is available. With less hardware to set up, time to set up and configure is reduced while the number of potential camera locations is increased.

The implementation of common IP standards provides simple integration of audio, video, and control as well as superior PTP timing. Support includes connection and discovery of the cameras on the network along with management of camera tally information, audio levels, control panel button presses and status using industry standard integration.

All of this functionality is an integral part of the media stream so the system is much easier to scale. Cameras can be added anywhere in the network. Authorized users can simultaneously access the same video and audio streams from any workstation. Even when audio is mixed in a completely different part of the world. In addition, since return signals from a production hub are no longer required, signal delays and total network bandwidth requirements are reduced.

Switching between production formats is also greatly simplified. An exchange in the field to a different bandwidth SFP connector takes just seconds. Even faster is the dynamic connectivity available with multiplexed IP connections. Implementation of AMWA-NMOS protocols means the camera is instantly identifiable to a network control system such as Grass Valley's GV Orbit. You can switch to new camera configurations with a single click.

For Equipment Owners

In a rapidly evolving production environment, the last thing you want to worry about is whether the camera can keep pace. LDX 100 has all of the high-performance characteristics required of a professional working camera today while offering extensive upgrade capability for the requirements of tomorrow. You can start deploying it as an HD camera doing 1080p productions and continue to add features up to triple-speed UHD as your production needs change.

Consider its rugged durability. LDX 100's ergonomic design not only makes the camera easier to handle, its field-tested exterior sports a bumper for low shots, and its all new cooling design makes the camera "Champagne shower" proof! It's no less reliable internally. Starting from the high reliability of the proven LDX 80 series, LDX 100 features superior cooling and fewer connections to maintain a long operational life.

Using LDX 100 on a production also enables you to more closely match production costs to a specific job. LDX 100 allows you to pay for features only when required. Apply generic credits from your Grass Valley Order Desk to enable options as needed on a daily or multiple day basis.

Growing into tomorrow's requirements is worry-free with LDX 100. If you are primarily producing in HD SDI today, LDX 100 offers you complete compatibility with Grass Valley's existing XCU. But that same camera can be taken from an SDI environment and plugged into an IP network without any transition concerns. Work in any combination or hybrid environment — and do it whenever you need to do it.

Operational Efficiency with NFC and LDX Scanner

LDX 100 reduces time spent looking after cameras. A suite of revolutionary inventory management features for streamlined logistical operations includes wireless Near Field Communication (NFC) that reduces handling time by several minutes every time you ship a camera. With NFC you can use a mobile phone to read usage information on check-out/check-in and load options into your equipment so that it is fully ready to operate for the next production — without ever powering up the camera! Just download and open the app, hold your phone close to the NFC mark on the camera, and then select the tabs for camera info and licenses. It's that simple.

The app for the LDX Scanner is now available on both the Apple and Android stores.

The new camera platform is planned for extensive upgrade capability while allowing a hybrid operation that evolves at your own pace. In addition to enabling just the features you need, the Grass Valley camera portfolio allows you to mix and match LDX camera models in the same system as well as components among models such as control panels, 2/3-inch lenses, and power supplies. LDX 100 also supports field-swappable SFP connectors at speeds of 10 Gb/s, 25 Gb/s, bidirectional 25 Gb/s, and 100 Gb/s QSFP to meet growing bandwidth requirements. In the uncertain world of evolving production requirements LDX 100 is a safe investment today that will ensure best performance for years to come.

Continuing in that philosophy of creating forward-looking value, Grass Valley's new Creative Grading control panel and tablet application not only make cameras simpler and faster to access, they eliminate the requirement to match one OCP per camera. Creative Grading panels can work across multiple cameras, even in multiple formats to create a single, unified look.

Creativity, Performance, Cost-effectiveness. Regardless of what aspects of the production chain concern you most, LDX 100 has a barrier-breaking solution for your needs.

SPECIFICATIONS

General

Temperature range: -20° to +45°C (-4° to 113°F) (operating)

Weight: approx. 5.9 kg (13.0 lbs.) (including handgrip and shoulder pad)

Dimensions: Width: 166.5 mm, depth: 397.7 mm, height: 252.3 mm (6.56 x 15.66 x 9.93 in.)

Power consumption (typ.): 100W

Camera

Pick-up device: 3x 2/3" UHD Titan CMOS imagers

Smear: no vertical smear

Shutter: no mechanical shutter

Optical system: F1.4 prism

Lens mount: 2/3" (B4 type) Bayonet lens mount

Optical filter wheels: 2x motorized wheels

Optical filters on first wheel: clear, 1/4 ND, 1/16 ND, 1/64 ND, Cap

Optical filters on second wheel: clear, 4P-star, soft focus, 2.5µ OLPF

Electronic color correction: 3200°K, 5600°K, 7500°K, FL, 2 AWB presets, variable, continuous auto white

S/N ratio: 62 dB typical (in 1080p50/59.94)

Sensitivity @2000 lux (typ.): F9 (in 2160p50 video mode), sensitivity mode = nominal

Aspect ratio: 16:9

Modulation depth: 60% (typical) at 800 TV lines (27 MHz) in 1080i50/59.94 modes

Digital resolution: 16-bit A/D-conversion with 34-bit processing in RGB

Horizontal resolution: >1,000 TV lines (HD), >2,000 TV lines (4K UHD)

Gain selection: -6 dB to +18 dB in 3 dB steps (user-definable presets) or continuous master gain

Standards compliant:
  SMPTE ST 2110-10, -20, and -30
  AMWA NMOS IS-04, -05 and -07

Connectivity

Microphone input (front): XLR-3 female, balanced, with switchable +48V phantom power

REF/AES BNC connector: Reference input, output or AES digital audio

BNC A to E connectors: Video BNC baseband connectors (1.5G, 3G or 12 G)

Camera control network (C2IP): RJ-45 Ethernet connector (1 Gb/s)

Ethernet/IP Trunk: RJ-45 Ethernet connector (1 Gb/s)

Lens connector: 12p Hirose connector

Viewfinder connector: 9p Fischer MiniMax connector

Monitoring video: Micro HDMI (type D) connector

Hybrid Fiber connector: SMPTE ST 304 hybrid fiber connector (swiveling)

Mounting holes: 2x ¼" - 20 UNC + 3x M4 threaded holes (camera thread)

Audio inputs (rear): 2x XLR-3 female, balanced, with +48 V phantom power

Intercom: XLR-5 with Engineering, Production and Program channels

DC Power input: 12V (12 to 17V), XLR-4 male <16A

DC Power output: 13V, XLR-4 female < 4A

Accessories

2" LCD viewfinder
7" LCD viewfinder

ORDERING

Camera Head and Accessories

LDX 100
LDX 100 camera head

EC 2-100
2-Inch Ocular Viewfinder for LDX 100 Series

VF7-100X
7-Inch native HD VF for LDX 100 Series

Options

3-Speed UHD option perpetual for LDX 100 Series
Native IP Option for LDX 100 Series
UHD 50/59.94 option perpetual for LDX 100 Series

Power Supply Options

HPE-300
Hybrid power extender, 300W, single AC input. UFP required

HPE-300-2AC
Hybrid power extender, 300W, dual AC input with auto-failover. UFP required

Camera Control

CGP 500
Creative Grading Control Panel

CCS One
Camera Control Server

CGA
Creative Grading App

EyeCatcher EC 2-100 Viewfinder

The eyes are the most important tools used during a production. Every detail of a shot is important—and the operator must be able to rely on what they are seeing. The **EyeCatcher EC 2-100** color ocular viewfinder provides users with the confidence to know what they see is what is also being seen in the control room and by viewers.

The Grass Valley EyeCatcher EC 2-100 is a high performance color LCD ocular viewfinder for the LDX camera heads. It is part of a full line of state-of-the-art color viewfinders and is very feature-rich with an intuitive user interface. The EyeCatcher viewfinder also has a stylish look and compact design.

EyeCatcher EC 2-100 offers the best possible image performance, high-speed response time, QHD resolution of 960x540 pixels and a diagonal size of 5.1 cm (2.0 in.). The controls are easy and flexible, similar to the Grass Valley 7-inch and 7.4-inch color LCD viewfinders. It comes with two (task) assignable user buttons and a -3 to +1 diopter compensation range.

KEY FEATURES

- Stylish look and compact design
- Offers the best possible image performance:
  – High resolution
  – Fast response
- High brightness and contrast ratio
- Ergonomic design for comfortable shooting

- Easy and flexible to use
- Intuitive viewfinder menu
- Camera menu easily accessible via viewfinder controls
- Brightness, contrast and peaking adjustment with rotary controls
- Color/monochrome picture switchable

- Tally on-low-off switch
- Operator-only tally indicator
- Underscan mode for full picture visibility off shoulder
- 2 (task) assignable buttons
- Adjustable diopter

SPECIFICATIONS

Connectors
Camera connector: Future proof 9-pin Fisher connector

Controls
2 assignable user buttons
Brightness rotary control
Contrast rotary control
Combined menu/Peaking rotary control

Indicators
LED indicators inside:
ISO (yellow)
On-air (red)
Call (green)

LED indicators front:
1x on-air (red) adjustable

General
Power consumption: 3.9W (supplied by camera head)
Operating temperature: -20°C to +45°C (-4°F to 113°F)
Storage temperature: -25°C to +70°C (-13°F to 158°F)
Weight: 900 grams (2.0 lbs.)

LCD
Diagonal size: 51 mm (2.0")
Resolution: 960x540 pixels (QHD)
Response rate: 16 ms

Performance
Color depth: 16.7 million colors
8-bit color
Brightness: 250 Cd/m^2
Contrast ratio: 200:1
Color temperature: 6500K (adjustable)
Pixel pitch: 0.047 mm x 0.047 mm
Supported formats: All current HD formats
Input signals: Y,Pr,Pb

The viewfinder's LCD panel is manufactured using high-precision technology that yields a pixel response of 99.99% or higher.

Note: EyeCatcher EC 2-100 is compatible with the LDX 100 series cameras only

VF7-100X Viewfinder

The **VF7-100X** viewfinder for the Grass Valley LDX cameras has native HD resolution in addition to high brightness and contrast as well as fast refresh rate, making it ideal for both indoor and outdoor use.

The VF7-100X is a compact, high-quality, flat panel color viewfinder designed to work with Grass Valley LDX system cameras. The stylish design allows for direct mounting to the mini wedge plate of the camera head in both EFP and SuperXpander configurations.

With native HD 1920x1080 pixels, panel focusing becomes easy. In combination with high brightness and contrast, and a fast display refresh rate, the VF7-100X is the perfect color viewfinder for both indoor and outdoor applications.

The VF7-100X color viewfinder has an intuitive menu structure which not only allows for settings of the viewfinder, but can also be used to call up the camera system menu via the viewfinder controls.

Three rotary controls, for contrast, brightness and peaking settings, are easily accessible at the front panel. In addition, three user assignable push buttons are located at the front bezel of the viewfinder.

The color temperature of the display can be adjusted to match the operator's personal preference without any affect on the main video signal, allowing the operator to match the display color temperature with the color temperature of the scene.

KEY FEATURES

- 7-inch IPS LCD panel with LED backlight
- Bonded LCD screen for reduced reflections
- High brightness and contrast
- Full HD resolution with 1920x1080 pixels
- Adjustable box and markers
- Camera menu access
- Supports all current and future formats
- Supports 4K/UHD operation
- Fast response time
- Easy accessible camera menu via viewfinder controls
- Versatile articulated bracket

SPECIFICATIONS

Connectors
Camera connector: Future proof 9-pin Fisher connector

Controls
Menu button
3 assignable user buttons
Brightness rotary control
Contrast rotary control
Peaking rotary control

Indicators
LED indicators front:
ISO (yellow)
On-air (red)
Call (green)

LED indicators back:
2x on-air (left/right) adjustable

General
Power consumption: 12W (supplied by camera head)
Operating temperature: -20°C to +45°C (-4°F to 113°F)
Storage temperature: -25°C to +70°C (-13°F to 158°F)
Weight: 1.8 kg (3.97 lbs.)

LCD*
Diagonal size: 177.8 mm (7 in.)
Active video: 16:9 1920 (H) x 1080 (V) pixel
Viewing angle: 178° horizontal, 178° vertical
Response rate: 17 ms typical

Performance
Color depth: 16.7 million colors
8-bit color
Brightness: 700 Cd/m^2
Contrast ratio: 800:1
Color temperature: 6500K (adjustable)
Pixel pitch: 0.081 x 0.081 mm
Supported formats: All current HD formats
Input signals: Y,Pr,Pb

Supplied Accessories
Complete mounting kit
Short sunhood
Cabling
User's guide

* The viewfinder's LCD panel is manufactured using high-precision technology that yields a pixel response of 99.99% or higher.

Note: VF7-100X is compatible with the LDX 100 series cameras only

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