LDX Series
A unique line of advanced imaging cameras built around Xensium-FT CMOS imagers. These cameras have the highest sensitivity and image performance across different video formats, while offering a new level of business flexibility by using one hardware platform with a flexible GV-eLicense software upgrade implementation.

LDX Compact Series
An extension to the LDX Series of cameras with an identical image performance and a comparable feature set but in a smaller mechanical package. They are the perfect companions to the LDX Series cameras and bring a new level of image performance and business flexibility for all applications where cameras with a compact form factor are required.

LDX HiSpeed 3X and LDX XtremeSpeed 6X Cameras
Members of the LDX camera range set a new standard in high-speed image acquisition. They capture fast-paced sports action and emotion with unrivaled quality levels at high frame rates and with instant time-to-air. All captured frames can be permanently recorded, so not a single moment will be missed or lost.

LDX Compact HiSpeed 3X and LDX Compact XtremeSpeed 6X Cameras
The world’s first self-contained high-speed cameras in a small form factor for space-constrained applications. As an extension to the LDX range of cameras, they produce the same level of quality from angles and in areas where high-speed cameras with a compact form factor are required.
Grass Valley, a Belden Brand, cameras are technology-leading imaging systems with a history of innovative developments and the recipient of six Emmy® Awards. Grass Valley offers a very comprehensive portfolio of live production camera systems that include the latest LDX camera heads, a complete line of 3G Transmission solutions, an extremely powerful camera control solution and a wide range of dedicated camera accessories such as viewfinders, converters and an interface gateway.

The latest high-definition video cameras from Grass Valley — the LDX Series, are a unique line of advanced imaging cameras built around Xensium-FT imagers, a new generation of camera imagers which combine all the advantages from CMOS imaging technology such as high sensitivity in all video modes, high dynamic range and low power consumption. They also include global shutter behavior which was before only possible with CCD imagers. Xensium-FT imagers deliver unmatched sensitivity and picture quality even in the most demanding of applications.

Productions need freedom, flexibility and adaptability. Grass Valley understands the value of being able to choose the right solution to fit specific requirements. The LDX Series includes the unique GV-eLicense program, where users have the choice of upgrading their cameras perpetually or by a 7-day term. An enhancement to the 7-day term license is the B.O.W.L. licensing option (simply, a bunch of weekly licenses) where users can pre-order any number of 7-day licenses and activate them whenever needed — without the need to go through an order process.

A complete line of 3G Transmission solutions are available to fulfill all the requirements which might be found with many different kinds of productions. With the new XCU dockable base station, Grass Valley offers a revolutionary concept in camera transmission. XCU is a real game-changer for video production companies such as OB truck operators as it helps to minimize operational costs and streamlines reconfiguration for each production. XCU is made out of two distinct units: the base station and a fixed cradle. The cradle can be mounted and wired into equipment racks, and the base station can be docked into different cradles as needed. All specific settings needed for the production environment are memorized in memory inside the cradle and will automatically configure the base station when it’s powered on.

To control all the cameras in a production environment, a powerful and flexible camera control solution has been developed. C2IP is the first camera control system on the market which uses Ethernet and TCP/IP open IT standards. Even the largest multicamera systems can be fully controlled over an Ethernet-based networked. With the Connect Gateway, an interface is available which provides integration for the C2IP camera control system into many different kinds of external control systems. An application has been developed where the basic camera settings can be controlled from all the current Grass Valley video production switchers. Now cameras can be an integral part of the total facility control system.

From the RefleX Superxponder kits for large lenses, high-resolution viewfinders, the ComfortPad shoulder pad with integrated side grip to lighted script boards, rain covers and universal transport cases, Grass Valley camera accessories are specifically designed to enhance camera operation and make users more efficient and creative.

More than 50 years of imaging innovation has led to a new standard in live broadcast acquisition: the LDX Series of software upgradable cameras. LDX Flex is a single-format 1080i or 720p camera, LDX Première provides standard multiformat 1080i & 720p acquisition, LDX Elite adds 1080P60, while LDX WorldCam rounds out the series with 1080p production. Upgrading to the next level camera can be perpetual or on a 7-day term basis for the ultimate in production flexibility.

The LDX Camera models provide stunning images, based upon new, custom-designed Xensium-FT 2/3-inch CMOS imagers. The renowned Grass Valley imaging design team engineered the new Xensium-FT CMOS imagers to make artifact-free capture possible along with a significant improvement in sensitivity. To make images look their best, LDX incorporates TrueTexture — a unique feature to preserve texture throughout all processing parameters.

Another imaging innovation is ArtTouch, an intuitive interface between the operator and hard-wired controls, which significantly enhances artistic possibilities within a live broadcast. Looking back at the last five years in broadcasting, a lot has changed with respect to the way productions are being managed from an artistic point of view. To an increasing extent, there is a close collaboration between creative directors and the camera shaders, who adjust each camera feed to perfection.

With the LDX Series, a completely new level of artistic camera control is included, to support today’s and tomorrow’s requirements for live shading flexibility. By using the full latitude of the custom-designed Xensium-FT CMOS imager, control of every aspect of the image is available, so any degree of creative touch can be applied. The LDX Series provides enhanced colorimetry, color-matching and picture performance. Color temperature and tint are just two of the parameters that can be simultaneously adjusted across multiple cameras. Knee saturation control maintains a correct hue by using secondary compression. An advanced chromatic lens aberration correction and sharpness solution (CLASS) is applied (with basic-only system in the LDX Flex), and offers impressive sharpness improvements mainly on the left and right regions of the image. Other features assist in aperture correction, detail preservation and more.

Designed for the Operator

In addition to establishing a new standard for image acquisition, the design of the LDX Series focuses strongly on operator comfort and usability. Grass Valley proudly introduces the world’s first side grip (standard with LDX Première, LDX Elite and LDX WorldCam) and as a further extension

LDX Series
Advanced Imaging Camera System
A revolutionary series of cameras built for business flexibility and operational excellence, with superior imaging, processing and performance.
of usability, the first truly ergonomic shoulder pad (option for all LDX Series cameras). Not only does this shoulder pad provide the ultimate freedom to capture difficult angle shots, but it is also the world’s first shoulder pad that can compensate for a feature that’s different for every operator — the angle of the shoulder.

Until now, most handheld camera operators unconsciously lifted their shoulder to level the shot. This means that they continuously tense their muscles to lift equipment, which regularly is a total weight of about 7 kg (15.4 lbs). The new shoulder pad can be adjusted to compensate for each individual’s shoulder angle — relieving the muscles from actively lifting the weight. The new shoulder pad has been developed in close cooperation with camera operators from around the world along with physiotherapists to alleviate adverse long-term effects.

The LDX Series offers even more operational excellence. Button layouts and control knobs are ergonomically designed to allow the operator to find the right adjustments easily. Full control flexibility is possible thanks to well-dimensional control knobs. With the easily accessible separated "info" knob, all important information is displayed in the viewfinder instantaneously. The user-friendliness of LDX cameras has been further improved by using a streamlined menu structure that allows operators to access commonly used functions more quickly.

Engineered for the Bottom Line

The problem with buying a camera today is that it is not always clear what will be needed tomorrow. This leads to one of three possibilities: upgrade to new cameras in a few years, pay today for features that hopefully will be used in a few years, or market forces aligned perfectly so that the cameras provide exactly what is needed today and tomorrow.

The LDX Series changes all that. Buy what is needed today, and upgrade to the next level camera or higher as needed later.

With the unique LDX Series GV-eLicense program, users now have the ultimate flexibility in format support and feature set availability. With GV-eLicense, LDX Series users have the choice of upgrading their cameras in two different ways. A perpetual upgrade license provides an upgrade from any lower model of the range to the next higher model of the range. With a 7-day term upgrade license, the same flexibility is available, but for a lower cost. Multiple licenses may be purchased to upgrade cameras by more than one level (e.g., LDX Flex to LDX WorldCam) or to extend 7-day term upgrade licenses. For even greater flexibility, the ordering procedure can be simplified with the B.O.W.L. licensing system. With B.O.W.L., customers can preorder any number of 7-day licenses and activate them whenever needed.

LDX SERIES SPECIFICATIONS

**LDX Flex (Common to all LDX Series Cameras unless otherwise stated)**

**Camera Head**
- **General:**
  - Power: 54W
  - Temperature range: -20°C to +45°C (-4°F to 113°F) (operating)
- **Weight:**
  - 2.1 kg (4.6 lbs.) (including handgrip and shoulder pad)
  - 2.5 kg (5.6 lbs.) (including handgrip and ComfortPad shoulder pad)
- **Dimensions:**
  - Width: 170 mm, depth: 200 mm, height: 180 mm (6.7 x 7.9 x 7.1 in.)
- **Camera:**
  - Pick-up device: 3/2" Xensium-FT CMOS
  - Picture elements: 1920x1080
  - Smear: none visible
  - Shutter: no mechanical shutter
  - Optical system: F1.4 prism
  - Lens mount: 2/3" Bayonet type
  - Optical filter wheels:
    - 2x motorized wheels (1x motorized wheel on LDX Flex)
    - Optical filters on second wheel (not available on LDX Flex)
  - Optical filters on first wheel:
    - Clear, 4P-star, soft focus
  - Electronic color correction: 3200°K, 5600°K, 7500°K, FL, 2 AWB presets, Var, continuous auto white
  - Exposure: electronic exposure down to 1/1000 sec
  - Video modes:
    - Single-format: 1080p50/59.94 or 720p50/59.94 (selected at time of purchase)
    - F12 (1080p50, 720p50 and 1080p50)
    - F11 (1080p59.94, 720p59.94 and 1080p59.94)
    - F18 (1080pF23.98/24/25)
    - F16 (1080pF29.97)
  - S/N ratio: 60 dB typical
  - Aspect ratio: 16:9
  - Modulation depth: 60% (typical) at 800 TV lines (27 MHz) in 1080i50/59.94 & 720p50/59.94 modes
  - Digital resolution:
    - Floating point A/D-conversion with 16-bit performance and with 34-bit processing in RGB
    - Horizontal resolution: >1,000 TV lines
  - Gain selection:
    - -6 dB to +18 dB in 3 dB steps (user-definable presets) or continuous master gain
  - Connectivity:
    - Front microphone input: XLR-3 female, balanced, phantom +48V selectable
    - USB
    - Ethernet RJ-45
    - Lens connector: Hirose 12-pin
    - Viewfinder connector: 20-pin and HDMI
  - Control buttons:
    - PickMe
    - Info
    - Menu control
    - Intercom production/engineering
    - Filter wheel selection
    - Standard file recall
  - 4 user assignable Control switches:
    - On/Off
    - Color bar
    - Gain selection
    - Color temperature
    - Exposure time
    - White balance

**Upgrades**

- **Switchable:**
  - 1080i50/59.94 & 720p50/59.94
  - 1080PsF23.98/24/25/29.97 & 1080pF29.97
  - 1080pF23.98/24/25/29.97

**Accessories**

- 2" CRT viewfinder (b/w)
- 2.7" LCD viewfinder
- 7" LCD viewfinder
- 7.4" OLED viewfinder
- 9" LCD viewfinder

**GV-eLicense PROGRAM**

**Perpetual license:** Perpetual upgrade to the next camera in the range

**7-day term license:** 7-day (weekly) term upgrade to the next camera in the range

Multiple licenses may be purchased to upgrade cameras by more than one level (e.g., LDX Flex to LDX WorldCam). Multiple 7-day term licenses may be purchased for extended 7-day term upgrades. The B.O.W.L. licensing system provides a way to preorder any number of 7-day licenses and activate them whenever needed without having to place individual orders. No credit is given for the purchase of 7-day term licenses towards the purchase of a perpetual license.

**LDX Flex**
- Upgrade
  - 1080p50/59.94 or 720p50/59.94

**LDX Première**
- Upgrade
  - 1080pF23.98/24/25/29.97 & 1080p50/59.94 & 720p50/59.94

**LDX Elite**
- Upgrade
  - 1080pF23.98/24/25/29.97 & 1080p50/59.94 & 720p50/59.94

**LDX WorldCam**
- Upgrade
  - 1080p50/59.94 & 720p50/59.94

Note: Multiple licenses may be purchased to upgrade a camera more than one level, on a perpetual or 7-day term basis.

www.grassvalley.com
## LDX 2014 Cameras Catalog

**LDX Imager**

<table>
<thead>
<tr>
<th>Feature</th>
<th>LDX Flex</th>
<th>LDX Première</th>
<th>LDX Elite</th>
<th>LDX WorldCam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Next-generation Xensium-FT</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Sensitivity @ 2000 lux</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>S/N ratio</td>
<td>60 dB (typical)</td>
<td>F12 typical (all 50 Hz modes) / F11 typical (all 59.94 Hz modes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased sensitivity</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Improved digital noise reduction</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>TrueTexture: texture is preserved throughout all processing parameters</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Single-format: 1080i50/59.94 or 720p50/59.94</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switchable video formats: 1080i50/59.94 and 720p50/59.94</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switchable video formats: 1080PsF23.98/24/25/29.97 (artistic), 1080i50/59.94, 720p50/59.94</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switchable video formats: 1080p50/59.94 (3G), 1080PsF23.98/24/25/29.97 (artistic), 1080i50/59.94, 720p50/59.94</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Effortless 1080p50/59.94 acquisition with no increased lighting requirement</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Suitability for 3D productions</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>ArtTouch: smart coupling of video control functions</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Perfect picture matching across the complete LDX Series as well as the LDK installed base</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Ergonomically designed camera head with easy access to control buttons, including the new PickMe button</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>CLASS: basic electronic lens error correction</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>CLASS: advanced electronic lens error correction</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Standard secondary color corrector (two-color)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Advanced secondary color corrector (up to six sets for color hue, saturation and luminance adjustment)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Fully compatible with 3G fiber/triax transmission systems</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Compatible with C2IP control systems and ReflexX SuperXpander</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Second motorized optical filter wheel with 4P-star and soft focus</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Dynamic aperture correction</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Dynamic contour equalizer</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Power curve gamma control</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Depth of field indicator</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Side grip</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>ComfortPad shoulder pad</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
</tr>
</tbody>
</table>

*Multiple licenses may be purchased to upgrade more than one level (e.g., LDX Flex to LDX WorldCam), on a perpetual or 7-day term basis.

The B.O.W.L. (bunch of weekly licenses) licensing option allows users to preorder any number of 7-day licenses and activate them as needed.
LDX Compact Series
An extension to the revolutionary LDX Series of cameras — built for business flexibility and operational excellence — with superior imaging, processing and performance.

There are many applications for a compact and cost-efficient addition, or alternative, to system cameras. However, the expectation is that small form-factor cameras must perform just as well as the larger form factor cameras. In these applications — which include cameras mounted on a remote pan/tilt-head or cameras mounted on a sliding rail system — some of the typical features of a system camera, such as the intercom connection, the hand grip and shoulder pad, or the viewfinder mount are not needed. On the other hand, a more compact and lightweight camera body which is also easier to mount provides for a better integration for these applications.

The Grass Valley LDX Compact provides the same image performance and all of the control features of the LDX Series of high-quality broadcast system camera in a smaller mechanical package. This produces the same level of quality in areas and from angles that can be very space constrained.

The LDX Compact cameras are the perfect companions to the LDX Series cameras that are used extensively for live production in OB vans and studios. They also bring a new level of image performance and business flexibility for all applications where cameras with a compact form factor are required. This can be for various production requirements, such as compact cameras mounted on compact remote heads, on rail systems, as Spidercams, or in combination with gyroscopic stabilizing systems. The requirements can also be for cost/efficiency reasons where smaller cameras might be used instead of larger and more expensive system cameras. These applications include compact cameras mounted on robotic heads in studios, for fixed-mounted camera positions, on Steadicam systems, on camera cranes, or on 3D rigs. All these different applications can be found at production companies, broadcasters, houses of worship, education and many more.

**Designed for the Application**
In addition to establishing a new standard for compact image acquisition, the design of the LDX Compact series focuses strongly on the specific requirements for cameras with a smaller form factor. All of the typical interfaces which are required are available directly on the camera head. Additionally, LDX Compact series offers several new interfaces which include a USB connection for the management of GV-eLicenses, firmware upgrades and scene file storage. The camera also offers an HDMI interface for connecting any HD display with an HDMI or DVI interface to be used as a camera viewfinder or monitoring display. The user-friendlyness of LDX Compact cameras has been further improved by using a streamlined menu structure that allows operators to access commonly used functions more quickly.

**Engineered for the Bottom Line**
LDX Compact Première provides standard multi-format 1080i and 720p acquisition, LDX Compact Elite adds 1080Paf, while LDX Compact WorldCam incorporates all of the features of the LDX Compact Elite and adds effortless 1080p production as well — with the same sensitivity as shooting 1080i.

With the LDX Compact series, Grass Valley has paid particular attention to the ongoing costs of operation. LDX Compact cameras are fully integrated with our Ethernet-based C2IP camera control system. In addition, Connect Gateway is a powerful link to remote production capabilities. This smart feature provides full remote control over all camera controls via any IP-link and includes DigiTally — an all-digital remote tally protocol over IP.

The LDX Compact series offers the flexibility to adjust capital expenses and operating expenses to match a variety of business goals and factors. LDX Compact is about more than just pretty pictures: LDX Compact is built to face the realities of live production and broadcast — today and tomorrow.

With the unique LDX Series GV-eLicense program, users now have the ultimate flexibility in format support and feature set availability. With GV-eLicense, LDX Series users have the choice of upgrading their cameras in two different ways. A perpetual upgrade license provides an upgrade from any lower model of the range to the next higher model of the range. With a 7-day term upgrade license, the same flexibility is available, but for a lower cost. Multiple licenses may be purchased to upgrade cameras by more than one level (e.g., LDX Compact Première to LDX Compact WorldCam) or to extend 7-day term upgrade licenses. To enhance convenience and user flexibility, the B.O.W.L licensing system offers users a way to pre-order any number of 7-day licenses and activate them for any camera whenever needed with a secured web-based activation tool. The ability to upgrade to the next level camera, on a perpetual or 7-day term basis, provides the ultimate in production flexibility.
## Imager

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<td>✓</td>
<td>✓</td>
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<td>TrueTexture: texture is preserved throughout all processing parameters</td>
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<td>✓</td>
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<td>Switchable video formats: 1080i50/59.94 and 720p50/59.94</td>
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<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Optional RGB 4:4:4 1080i outputs</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
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<td>Effortless 1080p50/59.94 acquisition with no increased lighting requirement</td>
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<td>Compatible with C2IP control systems</td>
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</tbody>
</table>

*Multiple licenses may be purchased to upgrade more than one level (e.g., LDX Compact Première to LDX Compact WorldCam), on a perpetual or 7-day term basis.

The B.O.W.L. (bunch of weekly licenses) licensing option allows users to preorder any number of 7-day licenses and activate them as needed.
LDX 2014 Cameras Catalog

LDX COMPACT SERIES SPECIFICATIONS

General
Power: approx. 30W
Temperature range: -20° to +45°C (-4° to 113°F) (operating)
Water protection: Compliant to IPX0
Weight: approx. 2.5 kg (5.1 lbs.)
Dimensions (approx.):
Width: 113 mm (4.45 in.)
Depth: 156 mm (6.14 in.)
Height: 140 mm (5.51 in.)

Camera
Pick-up device: 3 x 2/3” Xensium-FT CMOS
Picture elements: 1920x1080
Smear: no vertical smear
Shutter: no mechanical shutter
Optical system: F1.4 prism
Lens mount: 2/3” Bayonet type
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, 4P-star, soft focus

Electronic color correction: 3200°K, 5600°K, 7500°K, FL, 2 AWB presets, Var, continuous auto white
Exposure: electronic exposure down to 1/1000 sec

Video Modes
LDX Compact Premiere switchable formats: 1080i50/59.94 & 720p50/59.94
LDX Compact Elite switchable formats: 1080PsF23.98/24/25/29.97, 1080i50/59.94 & 720p50/59.94
LDX Compact WorldCam switchable formats: 1080p50/59.94, 1080PsF23.98/24/25/29.97, 1080i50/59.94 & 720p50/59.94

Sensitivity at 2000 lux:
F12 (1080i50, 720p50 and 1080p50)
F11 (1080i59.94, 720p59.94 and 1080p59.94)
F10 (1080PsF23.98/24/25)
F16 (1080PsF29.97)

S/N ratio: 60 dB typical
Aspect ratio: 16:9
Modulation depth: 60% (typical) at 800 TV lines (27 MHz) in 1080i50/59.94 & 720p50/59.94 modes

Digital resolution: Floating point A/D conversion with 16-bit performance and with 34-bit processing in RGB
Horizontal resolution: >1,000 TV lines
Gain selection: -6 dB to +18 dB in 3 dB steps (user-definable presets) or continuous master gain

Connectivity
Lens iris connector: 12-pin female Hirose (front)
Lens zoom/focus connector: 12-pin male Hirose (front)
USB: GV-eLicense, scene files, service
HDMI: viewing
Ethernet RJ-45: C2IP camera control
Tally control/RS-232/RS-422/Private data: D-connector – 15-pin
HD-SDI main output: BNC 0.8 Vp-p, 75Ω, SMPTE 292M, 424/425M
HD-SDI viewing output: BNC 0.8 Vp-p, 75Ω, SMPTE 292M, 424/425M
Genlock input: BNC CVBS/BB/tri-level
Power input: XLR-4 male (10.5-17 VDC)

Control Buttons and LED Indications
PickMe
Menu control: menu select, rotary control
Color button
Info button
Filter wheel selection
Standard file recall
2 user assignable buttons
2 digit display: Power on, camera number
Tally LEDs: On Air, ISO, Call

Notes:
LDX Compact Premiere is upgradable to LDX Compact Elite.
Upgrades of more than one level may be achieved with multiple licenses.
LDX Compact Elite is upgradable to LDX Compact WorldCam.
For the LDX Compact Elite and LDX Compact WorldCam, a perpetual GV-eLicense for 10-bit RGB 4:4:4 outputs in 1080i is available.

GV-eLicense PROGRAM

Perpetual license: Perpetual upgrade to the next camera in the range
7-day term license: 7-day (weekly) term upgrade to the next camera in the range
The unique GV-eLicense program from Grass Valley offers users the ultimate flexibility to initially invest in a camera that offers a minimum feature set and upgrade to a more advanced feature set when needed. It is a future-proof concept which helps to secure the investment in new technology and shifts CAPEX to OPEX.

Multiple licenses may be purchased to upgrade cameras by more than one level (e.g., LDX Compact Premiere to LDX Compact WorldCam). Multiple 7-day term licenses may be purchased for extended 7-day term upgrades. The B.O.W.L. licensing system provides a way to preorder any number of 7-day licenses and activate them whenever needed without having to place individual orders. No credit is given for the purchase of 7-day term licenses towards the purchase of a perpetual license.
XCU Camera Transmission

The XCU WorldCam and XCU Elite for LDX Series and many LDK Series camera heads is part of Grass Valley’s 3G Transmission series. XCU is a follow up to the world’s first transmission system that supports all HD video formats (720p, 1080i and 1080p) with full performance over triax and fiber cables between the camera heads and the base station. The rack-mounted XCU cradle makes the XCU chassis easily removable.

The Grass Valley XCU WorldCam and upgradable XCU Elite base stations are members of the 3G Transmission series and work with all 3G transmission adapters to form a 3G-capable camera transmission solution for LDX Series and many LDK Series camera heads (see specifications). These third-generation transmission solutions from Grass Valley are no-compromise, fully featured solutions that can cope with the broadcast requirements of today and tomorrow.

The 3G transmission systems are heavy-duty, high-quality, multi-standard transmission systems with new and specially developed advanced technologies. The XCU WorldCam is fully 3G and 3D ready, and support current 1080i50/59.94, 720p50/59.94 and 1080PsF23.98/24/25/29.97 formats as well as 1080p50/59.94 transmission from the LDX WorldCam. The XCU Elite supports current 1080i50/59.94, 720p50/59.94 and 1080PsF23.98/24/25/29.97 formats and is upgradable to full XCU WorldCam specifications for 1080p50/59.94 operation.

The Grass Valley 3G Triax system works perfectly with triax cables that are pre-wired in venues as well as users’ current cable stock, eliminating the need for expensive new cabling. Compared to conventional HD triax, the maximum cable length has increased by 25% to 1,500m (4,921 feet) while still offering the same robustness and reliability that triax is known for.

The Grass Valley 3G Fiber system works perfectly with SMPTE hybrid fiber cables and offers an increased maximum cable length and the capability to support even the extended bandwidth requirements of a SuperSloMotion camera system. The maximum cable length including power can be up to 3,000m (9,842 feet) and, when powering the camera locally, a maximum cable length of more than 40,000m (24.85 miles) can be achieved.

Available in Twin and Dual configurations, XCU WorldCam and XCU Elite base stations offer the flexibility to use any mix of triax and fiber cables without any compromise in the performance or in the feature set.

The XCU Twin is the ideal solution in combination with a camera using the 3G triax adapter. In addition to interfacing with triax cable it offers the possibility to alternatively use dark fiber cables whenever the maximum cable length of the triax cable is not enough. The maximum distance for the dark fiber cable can be more than 40,000m (24.85 miles). Close to the camera, the 3G converter boxes will convert the dark fiber cable back into triax.

The XCU Dual is the ideal solution in combination with a camera using the 3G fiber adapter. In addition to interfacing with triax cable it offers the possibility to alternatively use dark fiber cables whenever the maximum cable length of the triax cable is not enough. The maximum distance for the dark fiber cable can be more than 40,000m (24.85 miles). Close to the camera, the 3G converter boxes will convert the dark fiber cable back into triax.

Just as the dockable concept of the LDX camera system permits easy exchange of the transmission adapters with the camera heads, a range of wireless adapter kits have been developed and introduced by several dedicated RF technology providers. By supporting a wide range of highly integrated wireless transmission solutions with different feature sets and functionality, LDX camera systems can satisfy diverse user requirements.

Unique Cradle Concept

XCU base stations take flexibility even further with their unique cradle connectivity. The XCU cradle (XCU only) is equipped with one cradle — additional cradles are available separately — and can be pre-mounted and pre-wired in the rack while the XCU base stations can easily slide in and out whenever needed, making a secure mechanical and electrical connection.

Unique benefits are:
- Significant time saving while reconfiguring OB trucks
- Preventing cabling mistakes
- Reducing vehicle or facility costs
- Takes minimal rack space: a compact design of only 2 RU

All of these features combined deliver flexibility between OB trucks and cut the shipping/transport costs of moving XCUs between locations.

XCU base stations offer extended connectivity. The XCU WorldCam is equipped with eight HD outputs, six of which are single-link HD-SDI outputs (1.5 Gb/3 Gb switchable) with the remaining two being 1.5 Gb HD-SDI outputs — which automatically converts the signal to 1080i or 720p when the camera head is delivering 1080p. The XCU Elite features eight 1.5 Gb HD-SDI outputs. In addition, three HD return connections are provided, two of which can be selected as a return channel by the camera adapter.

Audio connectivity offers great versatility with two analog outputs and two AES/EBU pair outputs (2x2 channels) which are also embedded in the HD-SDI outputs.
XCU CAMERA TRANSMISSION KEY FEATURES

- Unique cradle connectivity to support dockable XCU (eXchangeable control unit)
- Built-in memory in XCU Cradle for production-set storage
- XCU WorldCam & XCU Elite are members of the versatile 3G Transmission series
- Full support for all HD formats:
  - XCU WorldCam: 6x 3G and 2x 1.5G or 8x 1.5G video outputs
  - XCU Elite: 8x 1.5G video outputs
- Extensive (analog/digital) audio connectivity
- Embedded audio
- 3x selectable return inputs:
  - XCU WorldCam and Elite: 3G, HD, or SD
- Universal 3G power supply
- Compact (2 RU), robust base station
- XCU Elite fully upgradable to XCU WorldCam

XCU CAMERA TRANSMISSION SPECIFICATIONS

XCU Elite & XCU WorldCam (see XCU WorldCam additional specifications)

**Video**

- XCU WorldCam: 720p/1080i/1080p/1080PsF
- XCU Elite: 720p/1080p/1080PsF

**Compatible Cameras**

- All LDX Series cameras*
- LDK 8000 Elite Series (LDK 4000 Elite, LDK 8000 Elite Enterprise and LDK 8000 Elite WorldCam)*
- LDK 8000 Series (LDK 4000, LDK 8000 Enterprise and LDK 8000 WorldCam)*
- LDK 8300 (1X speed mode only)

**General (incl. cradle)**

- Dimensions XCU + cradle (HxWxL, approx.): 438 x 88 x 510 mm (19” rack, 2U) (17.2 x 3.5 x 20.1 in.)
- Weight XCU: 7.3-7.7 kg (16.1-16.9 lbs.) (depending on version) full-option equipped
- Weight XCU: 11.8-12.2 kg (26.0-26.9 lbs.) (depending on version) full-option equipped
- Weight XCU: 18.1-18.9 kg (39.8-41.8 lbs.) (depending on version) full-option equipped
- Power requirement: AC 100V/240V, 47 to 63 Hz
- Power consumption: Total power (Cam + XCU) 450W max.
- Power connector: IEC type, 3-pin male
- Power input: AC 100V/240V, 47 to 63 Hz

**Connectors**

- Composite Video monitoring output: BNC 1x, 1.0 Vp-p, 75 Ω, SMPTE 259M ITU-R, BT.601
- SD-SDI monitoring out: BNC 1x, 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- HD-SDI monitoring out: BNC 1x, 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz or BNC 6x, 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- HD-SDI out: BNC 2x, 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- SD-SDI out: BNC 2x, 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- External video in: HD-SDI (1.5 Gb/3.0 Gb) or SD-SDI in (loop-through output), 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- HD-SDI out (live/shot): BNC 2x, 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- HD-SDI out: BNC 6x, 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- SD-SDI out: BNC 2x, 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- SDI-SDI out: BNC 1x, 1.0 Vp-p, 75 Ω, SMPTE 292M ITU-R, BCI-601
- Composite Video monitoring output: BNC 1x, 1.0 Vp-p, 75 Ω (CVBS text with video, 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; private data in/out; 100 kb TTL (RS-232)
- Control data: RJ-45 connector for C2IP (camera control)
- Control data: RJ-45 connector for Ethernet (future use)
- Fiber (Hybrid) executions: Lemo Hybrid fiber connector acc. SMPTE 304 (other fiber connectors on request)
- Fiber (Single Mode) executions: ST/SC fiber connectors
- Triax executions: Fischer, ARD, Lemo-4E, Lemo-3T, BBC-Lemo, Trilock

**Dimensions**

- Altitude: Max. 15,420m (50,000 ft.)
- Weight XCU + cradle: 11.8-12.2 kg (26.0-26.9 lbs.) (depending on version) full-option equipped
- Weight XCU: 7.3-7.7 kg (16.1-16.9 lbs.) (depending on version) full-option equipped
- Power connector: IEC type, 3-pin male
- Power requirement: AC 100V/240V, 47 to 63 Hz

**Environmental**

- Altitude: Max. 15,420m (50,000 ft.)
- Temperature: 0 to +45° C (+32 to +113° F)
- Humidity: Max. 90% (non-condensing)
- Shock resistance: Max. 10G (transport, Max. 2G (operating)
- Weight XCU: 7.3-7.7 kg (16.1-16.9 lbs.) (depending on version) full-option equipped
- Power requirement: AC 100V/240V, 47 to 63 Hz

**Audio**

- Distortion: Less than 2% (1 kHz, -10 dBu output level)
- Frequency response: 150 Hz to 6 kHz (1 kHz, -10 dBu output level)
- S/N ratio: 58 dB (unweighted RMS)

**AES-EBU Specifications**

- AES-EBU 1+2: BNC 75Ω, Dig audio output Audio 1 and 2
- AES-EBU 3+4: BNC 75Ω, Dig audio output Audio 3 and 4
- Intercom in/out (2/4-wire intercom): D-sub 15-pin, female (program in, production in/out, engineering in/out), in: 0 or 6 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)

XCU WorldCam Additional Specifications

**Video**

- LDX WorldCam and LDK 8000 WorldCam required: 50/59.94 Hz

**Compatibility**

- LDX WorldCam and LDK 8000 WorldCam

**Connectors**

- HD-SDI out: BNC 6x 0.8 Vp-p, 75 Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz or BNC 6x 0.8 Vp-p, 75 Ω, SMPTE 425M-A, 425M-B, 1080p at 50/59.94 Hz

* 1.0 Vp-p, 75 Ω

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LDX 2014 Cameras Catalog
Camera Adapters
The dockable implementation of LDX Series cameras provides fast and easy configuration of the camera transmission system. Depending on the type of camera transmission system to be used, there is a choice of two different transmission adapters. For wireless applications, there are several different highly integrated transmission solutions available from third-party suppliers.

The latest generation of 3G Triax and 3G Fiber transmission adapters offers several improvements for users in different areas such as:

- Improved operation with crane/robotic heads
- Improved maximum power from the DC output to directly power various teleprompters
- Improved user interface area with illuminated buttons and indicator LEDs for easy control during installation and operation
- Approximately 1 kg lower weight, making the total camera system weight to be one of the lowest available
- More than 25% reduction in power consumption, which translates into a much lower operating temperature as well

Combining a dockable camera head, different transmission adapters, XCU dockable base stations and a wide variety of different 3G field converters, provides the means for LDX to deliver the ultimate flexibility for even the most demanding of applications.

**SPECIFICATIONS**

**LDX 3G Triax Adapter (LDX 5640)**
- Power requirements: Triax powered or 12VDC (local)
- Operating temperatures: -20 to +45°C (-4 to +113°F)
- Storage temperatures: -25 to +70°C (-13 to +158°F)
- Weight (approx.): 2.1 kg (4.6 lbs.)
- Dimensions (L x W x H): 222.1 x 132.7 x 212.1 mm (8.7 x 5.2 x 8.4 in.) without handgrip
- Triax connection: Swivel Triax connector (Fischer, ARD, LEMO-4E, LEMO-3T, BBCLEM0 and TriLock types available)
- Triax cable length: 1,500m (5,000 ft.) max. with 14 mm (0.55") cable (specified for Draka Triax cable)
- Analog VF output or AES/EBU audio input: BNC connector 1.0 Vp-p; 75Ω
- VF output or main output: BNC connector 1.0 Vp-p; 75Ω
- Reference input: BNC connector 0.6 Vp-p; 75Ω HD tri-level reference signal
- EXT video output connector: BNC connector 1.0 Vp-p; 75Ω
- Teleprompter output or analog ref input: BNC connector 1.0 Vp-p; 75Ω
- Auxiliary: 20-pin data connector with Tracker intercom, remote control lines and studio signalling
- Rear microphone inputs: 2x XLR-3, balanced, +48V phantom power
- Intercom: XLR-5 with 3 channels (engineering, production and program)
- DC power input: 12V (11 to 17V), XLR-4 male
- Script light power output: 12V (100 mA), 4-pin Hirose
- DC power output: 12V/4A, XLR-4 female

**LDX 3G Fiber Adapter (LDX 5650)**
- Power requirements: Hybrid fiber powered or 12VDC (local)
- Operating temperatures: -20 to +45°C (-4 to +113°F)
- Storage temperatures: -25 to +70°C (-13 to +158°F)
- Weight (approx.): 2.1 kg (4.6 lbs.)
- Dimensions (L x W x H): 222.1 x 132.7 x 212.1 mm (8.7 x 5.2 x 8.4 in.) without handgrip
- Fiber connector: Swivel hybrid fiber connector SMPTE 304M Lemo (other connectors available on request)
- Cable length: 3,000 m (10,000 ft.) max. using SMPTE 311M hybrid fiber cable
- Analog VF output or AES/EBU audio input: BNC connector 1.0 Vp-p; 75Ω
- VF output or main output: BNC connector 1.0 Vp-p; 75Ω
- Reference input: BNC connector 0.6 Vp-p; 75Ω HD tri-level reference signal
- EXT video output connector: BNC connector 1.0 Vp-p; 75Ω
- Teleprompter output or analog ref input: BNC connector 1.0 Vp-p; 75Ω
- Auxiliary: 20-pin data connector with Tracker intercom, remote control lines and studio signalling
- Rear microphone inputs: 2x XLR-3, balanced, +48V phantom power
- Intercom: XLR-5 with 3 channels (engineering, production and program)
- DC power input: 12V (11 to 17V), XLR-4 male
- Script light power output: 12V (100 mA), 4-pin Hirose
- DC power output: 12V/4A, XLR-4 female
3G Fiber-Based Systems

LDX Premiere

LDX Flex

LDX Elite

LDX WorldCam

LDX Premiere

LDX Flex

LDX Elite

LDX WorldCam

3G Triax-Based Systems

LDX Premiere

LDX Flex

LDX Elite

LDX WorldCam
Grass Valley cameras are technology-leading imaging systems with a history of innovative developments and the recipient of six Emmy Awards. Grass Valley offers a very comprehensive portfolio of live production camera systems that include the latest LDX camera heads for standard-speed operation up to 6X ultra slow-motion applications, a complete line of transmission solutions, an extremely powerful camera control solution and a wide range of dedicated camera accessories such as viewfinders, converters and an interface gateway.

The LDX HiSpeed (LDX HS) and LDX XtremeSpeed (LDX XS) are the latest members of the LDX camera range, available in both system and compact configurations. With the introduction of the LDX HS and the LDX XS, a new standard in high-speed capturing is available, based on extensive experience in the field of high-speed acquisition.

The LDX HS and LDX XS offer exactly the same outstanding ergonomics as all the other cameras from the LDX range including the integrated zoom control in the handgrip, the unique side grip and the optional ComfortPad shoulder pad.

To capture fast-paced sports action and emotion at unrivaled quality levels, high frame rates and with instant time-to-air, all captured frames are outputted to the XCU base station instantaneously, without a cumbersome double-action memory buffer in the camera. This makes the difference between being able to bring a shot to air, or missing the moment. Since all the images can be permanently recorded, they can be used at any time and not a single moment will be missed or lost. Until now, with ultra slow-motion cameras, only the images which have been downloaded from the loop recorder inside the camera head have been available for later use.

The LDX HS is the direct successor of the Grass Valley LDK 8300 for all 3X speed applications in 1.5G acquisition formats. However, it is the only super slow-motion camera system available which offers an upgrade path to a fully featured ultra slow-motion camera system with up to 6X speed operation. This increase in flexibility offers a much more future-ready solution than any other 3X speed camera system previously available.

The LDX XS is the first handheld ultra slow-motion camera to offer the flexibility to move close to where the action is. With up to 6X speed operation, the camera permits the user to choose the speed which offers the best compromise between sensitivity, noise performance, additional motion resolution and the replay time needed for a wide variety of applications in live broadcast.

As the LDX XS and the LDX HS are part of the LDX range, they integrate seamlessly and offer easy matching with all the other camera positions. They are all built around three extremely powerful and Grass Valley designed Xensium-FT imagers, which is the latest generation of camera imagers offering all the advantages of CMOS imaging technology—high sensitivity in all video modes, high dynamic range, low power consumption and fast readout possibilities. They also include global shutter behavior which was previously only possible with CCD imagers. Xensium-FT imagers deliver unmatched sensitivity and picture quality even in the most demanding of applications.

To make images look their best, LDX incorporates TrueTexture—a unique feature to preserve texture throughout all processing parameters. Another imaging innovation is ArtTouch, an intuitive interface between the operator and hardwired controls, which significantly enhances artistic possibilities within a live broadcast. Looking back at the last five years in broadcasting, a lot has changed with respect to the way productions are being managed from an artistic point of view. To an increasing extent, there is a close collaboration between creative directors and the camera shaders, who adjust each camera feed to perfection. With all LDX cameras, a completely new level of artistic camera control is included, to support today’s and tomorrow’s requirements for live shading flexibility. By using the full latitude of the custom-designed Xensium-FT CMOS imager, control of every aspect of the image is available, so any degree of creative touch can be applied.

All LDX cameras provide enhanced colorimetry, color-matching and picture performance. Color temperature and tint are just two of the parameters that can be simultaneously adjusted across multiple cameras. Knee saturation control maintains a correct hue by using secondary compression. An advanced chromatic lens aberration correction and sharpness solution (CLASS) is applied (with only a basic system in the LDX Flex), and offers impressive sharpness improvements primarily on the left and right regions of the image. Other features assist in aperture correction, detail preservation and more.

All camera operations with high frame rate capturing — such as in super slow-motion and ultra slow-motion applications — face a unique challenge caused by most artificial light sources. In stadiums, sports arenas and the like, lighting conditions are often not ideal for high-speed acquisition. A visual flicker is perceived as changes in light levels due to the mismatch between the camera scanning frequency and the power frequency of artificial lights. With the unique AnyLightXtreme feature for LDX HS and LDX XS high-speed camera systems, there is compensation for this mismatch that helps to automatically reduce flicker, with several presets for different lighting conditions available in the cameras. These presets can be accessed from the operational control panel (OCP) or the master control panel (MCP). The various presets permit the camera to reduce the flickering in the most effective way based on the lighting situation and scanning frequency.

Productions need freedom, flexibility and adaptability. Grass Valley understands the value of being able to choose the right solution to fit specific requirements. Since the LDX HS and LDX XS camera systems enable operation in a variety of different modes — which includes single speed (1X) operation with full performance — they can be used without any compromise in nearly all applications.
With the unique GV-eLicense program, where users have the choice of upgrading their cameras with a perpetual or 7-day term, the LDX HS can be upgraded to the LDX XS, which offers additional flexibility. An enhancement to the 7-day term license is the B.O.W.L. (bunch of weekly licenses) licensing option, where users can preorder any number of 7-day licenses and activate them whenever needed — without the need to go through an order process.

To support with full performance the increased bandwidth which is required for 3X 1080p and 6X speed ultra slow-motion operation, a new transmission solution has been developed — the XCU XtremeSpeed XF Fiber base station, which is fully compatible with the XCU cradles used for the 3G Triax and 3G Fiber XCU base stations. This is clear proof that the XCU concept is a real game-changer for video production companies such as OB truck operators as it helps to minimize operational costs and streamlines reconfiguration for each production. XCU consists of two distinct components: the base station and a fixed cradle. The cradle can be mounted and wired into equipment racks and the base station can be docked into different cradles as needed. All specific settings needed for the production environment are memorized in memory inside the cradle and will automatically configure the base station when it’s powered on.

To control all the different Grass Valley cameras in a production environment, a powerful and flexible camera control solution is available. C2IP is the first camera control system available which uses Ethernet and TCP/IP open IT standards so that even the largest multicamera systems can be fully controlled over an Ethernet-based network. With the Connect Gateway, an interface is available which provides integration for the C2IP camera control system into many different kinds of external control systems. An application has been developed where the basic camera settings can be controlled from all the current Grass Valley video production switchers. Now all the different Grass Valley cameras can be an integral part of the total facility control system.

From the Reflex SuperXpander kits for large lenses, high-resolution viewfinders, the ComfortPad shoulder pad with integrated side grip, to lighted script boards, rain covers and universal transport cases, all the different Grass Valley camera accessories are also fully compatible with the LDX HS and LDX XS cameras.

**LDX HiSpeed & LDX XtremeSpeed CAMERA SERIES SPECIFICATIONS**

**LDX HiSpeed**
(common to LDX XtremeSpeed cameras unless otherwise stated—see below)

**Camera Head**

- **General:**
  - **Power:** 34W
  - **Temperature range:** -20°C to +45°C (-4° to 113°F) (operating)
  - **Weight:** 2.1 kg (4.6 lbs.) (including handgrip and shoulder pad)
  - **Dimensions:** width: 170 mm, depth: 200 mm, height: 180 mm (6.7 x 7.9 x 7.1 in.)
  - **Camera:** Pick-up device: 3x 2/3" Xensium-FT CMOS
  - **Picture elements:** 1920x1080
  - **White balance:** auto white
  - **Smear:** no vertical smear
  - **Shutter:** no mechanical shutter
  - **Optical system:** F1.4 prism
  - **Lens mount:** 2/3" Bayonet type
  - **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, 4P-star, soft focus
  - **Electronic color correction:** 3200°K, 5600°K, 7500°K, FL, 2 AWB presets, Var. continuous auto white
  - **Exposure:** electronic exposure down to 1/1000 sec

**Video modes:**
- 1080i50/59.94/150/179.82 & 720p50/59.94/150/179.82
- Sensitivity at 2000 lux:
  - F12 (1080i50, 720p50, 1080p50)*
  - F11 (1080i59.94, 720p59.94, 1080p59.94)*
  - F6.9 (1080i150, 720p150, 1080p150)*
  - F6.3 (1080i179.82, 720p179.82, 1080p179.82)*
  - F4.9 (1080i350, 720p350)*
  - F4.5 (1080i359.64, 720p359.64)*

**Accessories**
- 2" CRT viewfinder (B&W)
- 2.7" LCD viewfinder
- 7" LCD viewfinder
- 7.4" OLED viewfinder
- 9" LCD viewfinder

**Note:** LDX HiSpeed can be upgraded to LDX XtremeSpeed

**LDX XtremeSpeed**

**Video Modes**
- Switchable: 1080i50/59.94/150/179.82, 1080i50/59.94/150/179.82/300/359.64 & 720p50/59.94/150/179.82/300/359.64
- Format support depends on model

**Connectivity:**
- Front microphone input: XLR-3 female, balanced, phantom +48V selectable
- USB
- Ethernet RJ-45
- Lens connector: Hirose 12-pin
- Viewfinder connector: 2D-pin and HDMI

**Control buttons:**
- PickMe
- Info
- Menu control
- Intercom production/engineering
- Filter wheel selection
- Standard file recall
- 4x user assignable
- Control switches:
  - On/off
  - Color bar
  - Gain selection
  - Color temperature
  - Exposure time
  - White balance

**GV-eLicense PROGRAM**

**Perpetual license:** Perpetual upgrade from LDX HiSpeed to LDX XtremeSpeed

**7-day term license:** 7-day (weekly) term upgrade form LDX HiSpeed to LDX XtremeSpeed

Multiple 7-day term licenses may be purchased for extended 7-day term upgrades. The B.O.W.L. licensing system provides a way to preorder any number of 7-day licenses and activate them whenever needed without having to place individual orders. No credit is given for the purchase of 7-day term licenses towards the purchase of a perpetual license.
XtremeSpeed XF Fiber Transmission

XtremeSpeed XF Fiber (base station and camera adapter) is a future-ready transmission system which supports the large bandwidth required by LDX high-speed cameras without any compromises. The rack-mounted XCU (eXchangeable control unit) cradle is fully compatible with the 3G transmission XCUs, which makes the XCU chassis easily removable and permits converting any normal speed camera position into a high-speed camera position in just minutes.

Grass Valley XCU XtremeSpeed XF Fiber base stations have been developed to support the extended bandwidth requirements of LDX high-speed cameras with up to 6X speed operation. They are the latest members of the XCU range of camera base stations and share the same unique cradle concept with the other XCUs that are available for the LDX Series of cameras. The future-ready cradle concept supports the broadcast requirements of today and tomorrow.

The XtremeSpeed XF Fiber transmission systems are heavy-duty, high-quality, multistandard systems with specially developed advanced technologies. XtremeSpeed XF Fiber is fully 3G and 3D ready, and supports current 1080i50/59.94 and 720p50/59.94 formats in up to 6X speeds, as well as 1080p50/59.94 transmission in up to 3X speeds.

The XtremeSpeed XF Fiber system works perfectly with SMPTE hybrid fiber cables, offers an increased maximum cable length, and has the capability to support even the extended bandwidth requirements of high-speed camera systems. The maximum cable length (including power) can be up to 3,000m (9,842 feet), and when powering the camera locally, a maximum cable length of more than 40,000m (24.85 miles) can be achieved.

The unique cradle implementation of the XCU base stations take flexibility to a new level in connectivity. The XCU cradle (XCUs each come with one cradle — additional cradles are available separately) can be pre-mounted and pre-wired in the rack so that the XCU base stations can easily slide in and out whenever needed, making a secure mechanical and electrical connection.

Unique benefits are:
- Significant time saving while reconfiguring OB trucks
- Preventing cabling mistakes
- Reducing vehicle or facility costs
- Takes minimal rack space: a compact design of only 2 RU

The combination of all of these features delivers flexibility between OB trucks, and cuts the shipping/transport costs of moving XCUs between locations. XCU base stations offer extended connectivity. The XCU XtremeSpeed XF Fiber is equipped with eight HD outputs, six of which are single-link HD-SDI outputs (1.5 Gb/3 Gb switchable) with the remaining two being 1.5 Gb HD-SDI outputs. These automatically convert the signal to 1080i or 720p when the camera head is delivering 1080p. In addition, three HD return connections are provided, two of which can be selected as a return channel by the camera adapter. Audio connectivity offers great versatility with two analog outputs and two AES/EBU pair outputs (2x2 channels) which are also embedded in the HD-SDI outputs.

Patent pending
**XtremeSpeed XF FIBER TRANSMISSION KEY FEATURES**

- Unique cradle connectivity to support dockable XCUs
- Built-in memory in XCU cradle for production-set storage
- XtremeSpeed XF Fiber transmission supports the high bandwidth required by high-speed cameras
- Full support for all speeds and HD formats:
  - 1X to 6X speed
  - 720p/1080i/1080p/1080PsF
- Video outputs:
  - 6x 3G and 2x 1.5G or 8x 1.5G video outputs (in 1X speed)
  - 2x three phases on 6x 1.5G and 2x 1.5G live (in 3X speed 720p, 1080i)
  - 2x three phases on 6x 3G and 2x 3G live (in 3X speed 1080p)
  - 2x six phases on 6x 3G (dual-link) and 2x 1.5G live (in 6X speed 720p, 1080i)
- Extensive (analog/digital) audio connectivity
- Embedded audio
- 3x selectable return inputs:
  - 3G, HD, or SD
- Universal 3G power supply
- Compact (2 RU), robust base station

**XtremeSpeed XF FIBER TRANSMISSION SPECIFICATIONS**

**Video** (specific format support depends on the camera model)
- **720p**: 50/59.94/150/179.82/300/359.64 Hz
- **1080i**: 50/59.94/150/179.82/300/359.64 Hz
- **1080p**: 50/59.94/150/179.82 Hz

**Compatible Cameras**
- LDX HiSpeed and LDX XtremeSpeed

**General** (incl. cradle)
- Dimensions XCU + cradle (HxWxD, approx.): 438 x 88 x 510 mm (19" rack, 2 RU) (17.2x3.5x20.1 in.)
- Operating temperature: 0 to +45°C (+32 to +113°F)
- Storage temperature: -20 to +70°C (-4 to +158°F)
- Operation humidity: Max. 90% (noncondensing)
- Shock resistance: Max. 10G (transport), max. 2G (operating)
- Altitude: Max. 15,420m (50,000 ft.)
- Weight XCU + cradle: 11.8 kg (26.0 lbs.)
- Weight XCU: 7.3 kg (16.1 lbs.)
- Power requirement: AC 100V/240V, 47 to 63 Hz
- Power connector: IEC type, 3-pin male
- Power consumption: Total power (Camera + XCU) 450W max.

**Connectors**
- Telescripter in: BNC 1x (loop-through output), CVBS, 1.0 Vp-p, 75Ω
- Reference in: 1x (loop-through output), 1.0 Vp-p, 75Ω
- HD-SDI out*: BNC 6x 0.8 Vp-p, 75Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- HD-SDI out (live/effect)*: BNC 2x 0.8 Vp-p, 75Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- HD-SDI monitoring out: BNC 1x 0.8 Vp-p, 75Ω, SMPTE 292M, 1080i/720p at 50/59.94 Hz
- SD-SDI out: BNC 2x 0.8 Vp-p, 75Ω, SMPTE 259M ITU-R, BT.601
- SD-SDI monitoring out: BNC 1x 0.8 Vp-p, 75Ω, SMPTE 259M ITU-R, BT.601
- Composite video monitoring output: BNC 1x 1.0 Vp-p, 75Ω (CVBS test with video, for viewing purposes)
- Signaling in/out: D-sub 15-pin – female, private data in/out – 100 kb TTL (RS-232)
- Control data: RJ-45 connector for Ethernet (future use)
- Hybrid fiber connector: LEMO hybrid acc. SMPTE 304 (other fiber connectors on request)
- External video in: 3x HD-SDI (1.5 Gb/3.0 Gb) or SD-SDI 0.8 Vp-p, 75Ω
- Input 1 (loop-through output) / Inputs 2 and 3 (no loop-through output)
- 2-ch. audio: Audio out, 2x XLR-3 – 0/+6 dBu (±1.5 dB, max. 18 dBu, 600Ω, gain max. 70 dB)

**Power requirement:**
- AC 100V/240V, 47 to 63 Hz
- Power connector: IEC type, 3-pin male
- Power consumption: Total power (Camera + XCU) 450W max.

**Specific Formats:**
- **720p**: 50/59.94/150/179.82/300/359.64 Hz
- **1080i**: 50/59.94/150/179.82/300/359.64 Hz
- **1080p**: 50/59.94/150/179.82 Hz

**Frequency response:**
- 40 Hz to 15 Hz, (+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)

**AES-EBU 1+2:**
- BNC 75Ω, digital audio output
- Audio 1 and 2

**AES-EBU 3+4:**
- BNC 75Ω, digital audio output
- Audio 3 and 4

**Intercom in/out:**
- D-sub 15-pin, female – program in, production in/out, engineering in/out – in: 0 or 6 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)
Camera Adapters
The dockable implementation of LDX cameras provides fast and easy configuration of the camera transmission system. For the XF Fiber system, a compatible transmission adapter has been developed.

The feature set of the XF Fiber adapters is in line with the latest generation of 3G Triax and 3G Fiber transmission adapters and offers several improvements for users in different areas such as:

• Improved operation with crane/robotic heads
• Improved maximum power from the DC output to directly power various teleprompters
• Improved user interface area with illuminated buttons and indicator LEDs for easy control during installation and operation
• Approximately 1 kg lower weight, making the total camera system weight to be one of the lowest available
• More than 25% reduction in power consumption, which translates into a much lower operating temperature as well

The combination of dockable high-speed camera heads, XF Fiber transmission adapters and the XF XtremeSpeed XCU dockable base stations, provides the means for LDX high-speed camera systems to deliver the ultimate flexibility for even the most demanding of applications.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>LDX XF Fiber Camera Adapter (LDX 5660/10)</th>
<th>Power requirements: Hybrid fiber powered or 12 VDC (local)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperatures: -20 to +45°C (-4 to +113°F)</td>
<td></td>
</tr>
<tr>
<td>Storage temperatures: -25 to +70°C (-13 to +158°F)</td>
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<tr>
<td>Weight (approx.): 2.1 kg (4.6 lbs.)</td>
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<tr>
<td>Dimensions (L x W x H): 222.1 x 132.7 x 212.1 mm (8.7 x 5.2 x 8.4 in.) without handgrip</td>
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</tr>
<tr>
<td>Fiber connector: Swivel hybrid fiber connector SMPTE 304M Lemo (other connectors available on request)</td>
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</tr>
<tr>
<td>Cable length: 3,000 m (10,000 ft.) max. using SMPTE 311M hybrid fiber cable</td>
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<tr>
<td>Analog VF output or AES/EBU audio input: BNC connector 1.0 Vp-p; 75Ω</td>
<td></td>
</tr>
<tr>
<td>VF output or main output: BNC connector 1.0 Vp-p; 75Ω</td>
<td></td>
</tr>
<tr>
<td>Reference input: BNC connector 0.6 Vp-p; 75Ω</td>
<td></td>
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<tr>
<td>HD tri-level reference signal</td>
<td></td>
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<tr>
<td>EXT video output connector: BNC connector 1.0 Vp-p; 75Ω</td>
<td></td>
</tr>
<tr>
<td>Teleprompter output or analog ref input: BNC connector 1.0 Vp-p; 75Ω</td>
<td></td>
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<tr>
<td>Auxiliary: 20-pin data connector with Tracker intercom, remote control lines and studio signaling</td>
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<tr>
<td>Rear microphone inputs: 2x XLR-3, balanced, +48V phantom power</td>
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<tr>
<td>Intercom: XLR-5 with 3 channels (engineering, production and program)</td>
<td></td>
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<tr>
<td>DC power input: 12V (11 to 17V), XLR-4 male</td>
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</tr>
<tr>
<td>Script light power output: 12V (100 mA), 4-pin Hirose</td>
<td></td>
</tr>
<tr>
<td>DC power output: 12V/4A, XLR-4 female</td>
<td></td>
</tr>
</tbody>
</table>
LDX Compact HiSpeed & LDX Compact XtremeSpeed

The LDX Compact HiSpeed (LDX Compact HS) and LDX Compact XtremeSpeed (LDX Compact XS) are the world’s first self-contained high-speed cameras in a small form factor. They are an extension to the revolutionary LDX range of cameras — built for business flexibility and operational excellence — with superior imaging, processing and performance.

There are many applications for a compact and cost-effective addition or alternative to system cameras. However, up to now for many applications, cameras with a small form factor did not offer the flexibility or performance level of comparable system cameras with a larger form factor. In these applications — which include cameras mounted on a remote pan/tilt-head or cameras mounted on a sliding rail system — some of the typical features of a system camera, such as the intercom connection, the hand grip and shoulder pad, or the viewfinder mount are not needed. On the other hand, a more compact and lightweight camera body, which is also easier to mount, provides a better integration for these applications. In addition, cameras with a smaller form factor can be used at shooting positions where larger cameras have not previously been usable. These include dangerous camera positions at a motor race track or any other camera position very close to the action. Since capturing emotion is one of the main reasons for the use of high-speed imaging, it is often necessary to get close to where the action is to be able to get the best viewing positions.

The LDX Compact high-speed cameras provide the same image performance and all of the control features of the LDX HiSpeed and LDX XtremeSpeed system cameras (with the exception of the AnyLightXtreme feature) in a smaller mechanical package. This produces the same level of quality from angles and in areas that can be very space constrained, bringing a new level of image performance and business flexibility for all applications where high-speed cameras with a compact form factor are required. This can be for various production requirements, such as high-speed compact cameras mounted on compact remote heads, on rail systems, as Spidercams, or in combination with gyroscopic stabilizing systems. The requirements can also be for cost/efficiency reasons where smaller cameras might be used instead of larger and more expensive system cameras. These applications include high-speed compact cameras mounted on robotic heads in studios, for fixed-mounted camera positions, on Steadicam systems, on camera cranes, or on 3D rigs. All these different applications can be found in use at production companies, broadcasters and more.

Designed for Specific Applications

In addition to establishing a new standard for compact high-speed image acquisition, the design of the LDX Compact cameras focuses strongly on the specific requirements for cameras with a smaller form factor. All of the typical interfaces which are required are available directly on the camera head. Additionally, several new interfaces are available which include a USB connection for the management of GV-eLicenses, firmware upgrades and scene file storage. The cameras also offer an HDMI interface for connecting to any HD display with an HDMI or DVI interface to be used as a camera viewfinder or monitoring display. The user-friendliness of LDX Compact high-speed cameras has been further improved by using a streamlined menu structure that allows operators to access commonly used functions more quickly.

LDX Compact high-speed cameras offer the flexibility to adjust capital expenses and operating expenses to match a variety of business goals and factors. The LDX cameras are about more than just pretty pictures: LDX cameras are built to face the realities of live production and broadcast today and tomorrow. The unique GV-eLicense program offers users the ultimate flexibility in format support and feature set availability. With GV-eLicense, LDX Compact HS camera users have the choice of upgrading their cameras in two different ways: A perpetual upgrade license provides an upgrade from a LDX Compact HS camera to a LDX Compact XS camera. With a 7-day term upgrade license, the same flexibility is available, but for a limited timeframe and for a lower cost. Multiple licenses may be purchased to extend 7-day term upgrade licenses. To enhance convenience and user flexibility, the B.O.W.L. (bunch of weekly licenses) licensing system offers users a way to pre-order any number of 7-day licenses and activate them for any camera whenever needed with a secured web-based activation tool. The ability to upgrade to the next level camera, on a perpetual or 7-day term basis, provides the ultimate in production flexibility.
### LDX COMPACT HiSpeed & LDX COMPACT XtremeSpeed SPECIFICATIONS

#### General
- **Power:** Approx. 45W
- **Temperature range:** -20° to +45°C (-4° to 113°F) (operating)
- **Water protection:** Compliant to IPX0
- **Weight:** approx. 2.5 kg (5.5 lbs.)
- **Dimensions (approx.):**
  - Width: 113 mm (4.45 in.)
  - Depth: 156 mm (6.14 in.)
  - Height: 140 mm (5.51 in.)

#### Camera
- **Pick-up device:** 3 x 2/3” Xensium-FT CMOS
- **Picture elements:** 1920x1080
- **Smear:** no vertical smear
- **Shutter:** no mechanical shutter
- **Optical system:** F1.4 prism
- **Lens mount:** 2/3” Bayonet type
- **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, 4P-star, soft focus

#### Electronic color correction
- 3200°K, 5600°K, 7500°K, FL, 2 A WB presets, Var, continuous auto white

#### Exposure
- Electronic exposure down to 1/1000 sec

#### Video Modes
- **LDX Compact HiSpeed switchable:** 1080i50/59.94/150/179.82 & 720p50/59.94/150/179.82
- **LDX Compact XtremeSpeed switchable:** 1080i50/59.94/150/179.82, 720p50/59.94/150/179.82/300/359.64

#### Modulation depth
- 60% (typical) at 800 TV lines (27 MHz) in 1080i50/59.94 & 720p50/59.94 modes

#### Digital resolution
- Floating point A/D conversion with 16-bit performance and with 34-bit processing in RGB

#### Horizontal resolution
- >1,000 TV lines

#### Sensitivity at 2000 lux
- F12 (1080i50, 720p50, 1080p50)*
- F11 (1080i59.94, 720p59.94, 1080p59.94)*
- F6.9 (1080i150, 720p150, 1080p150)*
- F6.3 (1080i179.82, 720p179.82, 1080p179.82)*
- F4.9 (1080i300, 720p300)*
- F4.5 (1080i359.64, 720p359.64)*

#### S/N ratio
- 60 dB typical

#### Aspect ratio
- 16:9

#### Multiple 7-day term licenses may be purchased for extended 7-day term upgrades. The B.O.W.L. licensing system provides a way to preorder any number of 7-day licenses and activate them whenever needed without having to place individual orders. No credit is given for the purchase of 7-day term licenses towards the purchase of a perpetual license.

### GV-eLicense PROGRAM

#### Perpetual license:
- Perpetual upgrade from LDX Compact HiSpeed to LDX Compact XtremeSpeed

#### 7-day term license:
- 7-day (weekly) term upgrade from LDX Compact HiSpeed to LDX Compact XtremeSpeed

#### Notes:
- LDX Compact HiSpeed is upgradable to LDX Compact XtremeSpeed.
- * Format support depends on model

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**Control Buttons and LED Indications**
- **PickMe**
- **Menu control:** menu select, rotary control
- **Color bar button**
- **Info button**
- **Filter wheel selection**
- **Standard file recall**
- **2 user-assignable buttons**
- **2-digit display:** power on, camera number
- **Tally LEDs:** on-air, ISO, call
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 LDX cameras, it offers Ethernet-based control of up to 99 cameras using standard IP networking for live and multicamera productions.

The C2IP system offers an operational control panel (OCP) and a master control PC (MCP). 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 LDX cameras.

The MCP 450 master control PC offers similar high performance, including powerful production features and tools not available with any other camera control system.

For example, instead of laboriously querying each camera on your network to obtain its operational settings, the MCP 450 interprets and logs all network activity between cameras and control panels—automatically.

You can also use the data-gathering capabilities of the MCP 450 to adjust camera parameters on the fly. You can, for instance, use the panel's spreadsheet-like interface to review the paint settings for all cameras in your production, and then adjust them across the board or on a camera-by-camera basis.

For studios that support recurring productions, or mobile trucks that cover similar sporting events at different venues, the MCP 450 can save camera and production settings on standard USB storage media. You can even e-mail the files on this USB storage media from one venue to the next. When you’re ready, you just load the settings into the panel using USB media.

### 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 LDX cameras**
- **Camera control:**
  - Multicamera control supports up to 99 cameras
  - Multipoint 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 450:**
  - Control interface by touchscreen and/or USB mouse
  - Wide range of PC monitors can be used
  - Automatic data logging of all camera settings
  - Tools for fast reconfiguration/adjustment of camera settings
  - Can save settings to USB memory media
  - Accepts USB input devices
  - Very compact hardware unit doesn’t require any space in control desk
Connect Gateway
Provides a platform for both the current C2IP XML Gateway, LDX camera diagnostics, as well as for future software applications.

At Grass Valley, our commitment to providing tighter integration and control between Grass Valley products continues with the Connect Gateway, opening up camera control in ways you’ve never thought possible.

Connect Gateway is a dedicated platform that can simultaneously access the C2IP camera control network and a public Ethernet-based network.

The overall scope of Connect Gateway is to provide a platform for both the C2IP XML Gateway, LDX camera diagnostics, as well as for a number of software applications.

The first application available is the integration with the Kayenne and Karrera Video Production Center switchers which gives TDs control over multiple cameras directly from the switcher control panel via an Ethernet interface. This includes tally for each camera, with controls that include auto iris, auto black level, filter wheel position and color bars.

Scene files from multiple cameras can also be recalled quickly and simultaneously. This includes complex setups, such as camera shading, which are created and stored by video engineers on-location or in the studio.

Additional operational applications will follow shortly.

**LDX Camera Diagnostics**
Connect Gateway also contains a diagnostics tool for LDX cameras which gives an immediate update of the diagnostics data available in the camera components via the C2IP network. Types of cameras, software packages, temperatures, video format, transmission diagnostics and more are available in user-friendly overviews. Alerts will be generated when discrepancies occur.

**Software Development Kit (SDK)**
For integration of applications developed by a third-party, a dedicated Software Development Kit is available which also includes a Gateway and camera simulator.

Please go to http://www.grassvalley.com/ad/connect_gateway_sdk for the SDK request form. Submit the form and the SDK will be made available to you at no charge.

**KEY FEATURES**

- Gateway between external devices and camera control network
- Diagnostic tool for LDX camera components in the C2IP network
- Uses reliable and cost-effective Ethernet network infrastructure
- Uses widely accepted XML as its message protocol
- Hardware platform is built into a convenient 1 RU rack mounted industrial server
- Dual Ethernet port configuration for fully separated public Ethernet and C2IP network operation
- Redundant power supply for fail-safe operation
- Interfaces for standard VGA monitor and USB devices directly on the server

**SPECIFICATIONS**

Processor: Intel Core i3 2.93 GHz
Memory: 2 GB RAM
Drive: 160 GB SATA HDD, hot-pluggable
LCD diagnostics

Connectors front:
- 15-pin VGA for connecting a monitor during setup
- 2 USB 2.0 for keyboard/mouse during setup

Connectors back:
- NIC-1 RJ-45 1 GB Ethernet for the public network
- NIC-2 RJ-45 1 GB Ethernet for the C2IP network
- 15-pin VGA for connecting a monitor during setup
- 2 USB 2.0 for keyboard/mouse during setup

Two redundant 400 watt power supplies
Dimensions (without bezel) (HxWxD): 42.4 x 434.0 x 610 mm (1.67 x 17.10 x 24.00 in.)
RefleX SuperXpander

The RefleX SuperXpander is the perfect match for LDX cameras using the unique 3G Transmission system or XF Fiber Transmission system and turns a comfortable shoulder camera quickly and easily into a full-featured studio camera.

Grass Valley broadcast products offer production professionals the most comprehensive multiformat solutions for acquisition, production, storage and playback, as well as a strong foundation for centralized, proactive status and activity monitoring. The Grass Valley RefleX SuperXpander is such a solution. Compatible with the latest 3G Transmission family and the XF Fiber Transmission system, it supports box-type lenses, teleprompters and high-resolution viewfinders.

For sports and events coverage, the use of large zoom lenses is a common requirement. The RefleX SuperXpander acts as a large lens adapter, rapidly converting a portable camera into a mobile production system.

The lightweight RefleX SuperXpander provides secure mounting and balancing for the largest prompter monitors. For increased simplicity, the camera can remain mounted inside the RefleX SuperXpander housing for transport, saving rigging time and precious space, while ensuring that the camera is aligned and ready to go immediately. Alternatively, the camera can be mounted or released from the housing quickly so it can be switched between pedestal, box lens and handheld applications working with an EFP style lens—even during a live program.

The RefleX SuperXpander can be used with all Grass Valley viewfinders, providing an unprecedented degree of freedom. The unique design of the RefleX SuperXpander system puts even a large viewfinder close to the optical axis of the camera, making camera movements and positioning more intuitive for the operator to ensure that the shot is right every time.

The new hot shoe connector between the camera and the RefleX SuperXpander provides all power and signal connectivity — making it quick, convenient and reliable, with no need for extra cabling. The hot shoe connector also makes the RefleX SuperXpander transmission system-agnostic — 3G Fiber, 3G Triax and XF Fiber camera systems can be used with the same SuperXpander without the need of switching modules.

For operator convenience, the RefleX SuperXpander is equipped with a functional control panel placed at the rear of the camera. All camera functions can be selected through this panel with its intuitive button layout, with three of the buttons assignable by the operator. These buttons have a sophisticated backlight to improve readability in all lighting conditions and to indicate the status of the buttons.

Two utility power connectors are provided to drive external equipment. Each connector (XLR-4 female) is rated at 13.8V/8 amps.

KEY FEATURES

- Supports LDX cameras
- Transmission system-agnostic
- Supports 3G Transmission and XF Fiber Transmission products
- Improved rapid mounting of camera and box lens
- Direct connection of viewfinder to the camera
- Rock-solid configuration for all sizes of large lenses
- Convenient camera control panel at the rear
- Three assignable control buttons
- Mounting and balancing available for all prompter monitors
- Two fixed utility output connectors: total 13.8V@8A

SPECIFICATIONS

Dimensions (L x W x H): 526 x 287 x 347 mm (20.7 x 11.3 x 13.7 in.)
Weight (approx.): 8.5 kg (18.7 lbs.)
Operating temperatures: 0°C to +45°C (32°F to +113°F)
Storage temperatures: -20°C to +60°C (-4°F to +140°F)

Power supply: supplied by the base station
Power consumption: 250 VA max. fully equipped (supplied by the base station)
Utility power outputs: 2x 13.8 VDC XLR-4 female connector, 110 W max. (combined)
Lens interface: 36-pin Centronics female connector
EyeCatcher EC 270 Viewfinder

The Grass Valley EyeCatcher EC 270 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 270 offers the best possible image performance, high-speed response time, QHD resolution of 960x540 pixels and a diagonal size of 6.8 cm (2.7 in.). The controls are easy and flexible, similar to the Grass Valley 7-inch and 9-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
- Fully compatible with all LDX cameras
- Offers the best possible image performance:
  - High resolution
  - Fast response
- High brightness and contrast ratio
- Easy and flexible to use
- 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
- Diopter compensation range

SPECIFICATIONS

Connectors
Camera connector: 20-pin Hirose

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: 3.5W (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: 820 grams (1.8 lbs.)

LCD
Diagonal size: 68 mm (2.7”)
Resolution: 960x540 pixels (QHD)
Response rate: 14 ms

Performance
Color depth: 16.7 million colors
8-bit color
Brightness: 300 Cd/m²
Contrast ratio: 500:1
Color temperature: 6500K (adjustable)
Pixel pitch: 0.0615 mm x 0.0615 mm
Supported formats: All current HD formats
Input signals: Y/P'/Pb

The viewfinder’s LCD panel is manufactured using high-precision technology that yields a pixel response of 99.99% or higher.
LDK 5307 Viewfinder

The LDK 5307 viewfinder for the Grass Valley LDX cameras has high brightness and contrast as well as fast refresh rate making it ideal for both indoor and outdoor use.

The LDK 5307 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 high brightness and contrast, and a fast display refresh rate, the LDK 5307 is the perfect color viewfinder for both indoor and outdoor applications.

The LDK 5307 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 LCD panel with backlight
- 16:10 aspect ratio (16:9 active video plus monitor menu)
- High brightness and contrast
- 1:1 pixel zoom function
- Adjustable box and markers
- Camera menu access
- Supports all current HD formats
- Fast response time
- EFP and SuperXpander use
- Easy accessible front controls
- Robust magnesium housing
- Compatible with LDX system cameras

SPECIFICATIONS

Connectors
Camera connector: 20-pin Hirose

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.)
  - Total display: 16:10 800 (H) x 480 (V) pixels
  - Active video: 16:9 800 (H) x 450 (V) pixels
  - Viewing angle: 160° horizontal, 140° vertical
  - Response rate: 18 ms

Performance
- Color depth: 16.7 million colors
- 8-bit color
- Brightness: 350 Cd/m²
- Contrast ratio: 850:1
- Color temperature: 6500K (adjustable)
- Pixel pitch: 0.1905 x 0.1905 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.
The OLED technology of the **EyeCatcher 744** combines the benefits of traditional black and white CRT viewfinders with the magnificent color reproduction of today to meet the performance needs for the most demanding of live action applications.

The EyeCatcher 744 7.4-inch HD OLED color viewfinder is the perfect match for the LDX system cameras. Its compact size and robust mounting bracket make it ideal for use with a SuperXpander large lens adapter as well as in EFP configurations.

The EyeCatcher 744 is a compact, high-quality, 7.4-inch flat panel color viewfinder designed to work with Grass Valley LDX cameras. The stylish design allows for direct mounting to the mini wedge plate of the camera head in both EFP and SuperXpander configurations.

The OLED panel combines high brightness, high contrast ratio and high resolution with wide horizontal and vertical viewing angles, as well as an extremely fast refresh rate. This makes the EyeCatcher 744 the perfect color viewfinder for even the most demanding applications — which include (fast moving) sports acquisition, theatrical and show productions.

The EyeCatcher has an intuitive menu structure which not only allows operators to change the viewfinder settings, but can also be used to call up the camera system menu via the viewfinder controls.

### Key Features

- 7.4-inch OLED panel
- 16:9 aspect ratio
- High brightness and extremely high contrast
- Position adjustable 1:1 pixel zoom function
- Adjustable box and markers
- Camera menu access
- Supports all current HD formats
- Very fast refresh rate
- SuperXpander and EFP use
- Easy accessible front controls
- Robust magnesium housing
- Compatible with LDX system cameras

### Specifications

| Connectors  |  |
|-------------|  |
| Camera connector: 20-pin Hirose  |  |

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

| Indicators     |  |
|----------------|  |
| LED indicators front: |  |
| ISU (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: 2.0 kg (4.4 lbs.) |  |

| OLED*           |  |
|-----------------|  |
| Diagonal size: 7.4” |  |
| Active video: 16:9 960 (H) x 540 (V) pixels (QHD) |  |
| Viewing angle: 170° horizontal, 170° vertical |  |

| Performance     |  |
|-----------------|  |
| Color depth: 1.07 billion colors, 10-bit color |  |
| Brightness: 350 Cd/m² |  |
| Contrast ratio: 1,000,000:1 |  |
| Color temperature: 6500K (adjustable) |  |
| Pixel pitch: 0.171 x 0.171 mm |  |
| Supported formats: All current HD formats |  |
| Input signals: Y, Pr, Pb |  |

| Supplied Accessories |  |
|----------------------|  |
| Pan/tilt mounting bracket |  |
| Short sunhood |  |
| Cabling  |  |
| User’s guide |  |

* The viewfinder's OLED panel is manufactured using high precision technology that yields a pixel response of 99.99% or higher.
LDK 5309/10 Viewfinder

The LDK 5309/10 9-inch HD color viewfinder is the perfect match for the LDX cameras. Its size and very flexible mounting bracket make it ideal for use with a SuperXpander large lens adapter as well as in EFP configurations.

The LDK 5309/10 is a compact, high-quality, 9-inch 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. For optimized viewing position, the LDK 5309 has an articulated mounting bracket which allows the operator to move the viewfinder in many positions including straight behind the camera, which avoids blocking the view of the audience positioned behind the camera.

With high brightness and contrast, and a fast display refresh rate, the LDK 5309 is the perfect color viewfinder for both indoor and outdoor applications.

The LDK 5309 has an intuitive menu structure which not only allows operators to change the viewfinder settings, 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 affecting the main video signal, allowing the operator to match the display color temperature with the color temperature of the scene.

KEY FEATURES

- 9-inch LCD panel with backlight
- 16:10 aspect ratio (16:9 active video plus monitor menu)
- High brightness and contrast
- Position adjustable 1:1 pixel zoom function
- Adjustable box and markers
- Camera menu access
- Supports all current HD formats
- Fast refresh rate
- SuperXpander and EFP use
- Mounting bracket with extensive pan/tilt functionality
- Easy accessible front controls
- Robust magnesium housing
- Compatible with LDX system cameras

SPECIFICATIONS

Connectors
- Camera connector: 20-pin Hirose

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

Performance
- Color depth: 16.7 million colors
- 8-bit color
- Brightness: 800 Cd/m²
- Contrast ratio: 800:1
- Color temperature: 6500K (adjustable)
- Pixel pitch: 0.246 x 0.246 mm
- Supported formats: All current HD formats
- Input signals: Y, Pr, Pb

Supplied Accessories
- Extensive pan/tilt mounting bracket
- 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.
LDX 2014 Cameras Catalog

ORDERING

Camera Heads
LDX 80 WorldCam
LDX 80 camera head, supporting 1080i, 720p, PsF and 1080p formats

LDX 80 Elite
LDX 80 camera head, supporting 1080i, 720p and PsF formats

LDX 80 Première
LDX 80 camera head, supporting 1080i and 720p formats

LDX 80 Flex 1080i
LDX 80 camera head, supporting 1080i format

LDX 80 Flex 720p
LDX 80 camera head, supporting 720p format

LDX C80 WorldCam
LDX Compact camera head, supporting 1080i, 720p, PsF and 1080p formats

LDX C80 Elite
LDX Compact camera head, supporting 1080i, 720p and PsF formats

LDX C80 Première
LDX Compact camera head, supporting 1080i and 720p formats

LDX 86 HiSpeed
LDX camera head, supporting 3X speed (1080i, 720p) and all LDX Elite formats (except PsF formats)

LDX 86 XtremeSpeed
LDX camera head, supporting 6X speed (1080i, 720p), 3x speed (1080p, 1080i, 720p) and all the LDX WorldCam formats (except PsF formats)

LDX C86 HiSpeed (BNC)
LDX Compact camera head, supporting 3X speed (1080i, 720p) and all LDX Compact Elite formats (except PsF formats)

LDX C86 XtremeSpeed (BNC)
LDX Compact camera head, supporting 6X speed (1080i, 720p), 3x speed (1080p, 1080i, 720p) and all the LDX Compact WorldCam formats (except PsF formats)

Adapters
LDX 3G Triax Adapter
LDX camera head adapter for triax transmission

LDX 3G Fiber Adapter
LDX camera head adapter for fiber transmission

LDX XF Fiber Adapter
LDX camera head adapter for XF Fiber transmission

Transmission Systems
XCU WorldCam Triax
XCU 3G dockable base station—triax only

XCU WorldCam Fiber
XCU 3G dockable base station—fiber only

XCU WorldCam Twin
XCU 3G dockable base station—triax and single fiber

XCU WorldCam Dual
XCU 3G dockable base station—triax and hybrid fiber

XCU Elite Triax
XCU 1.5G dockable base station—triax only

XCU Elite Fiber
XCU 1.5G dockable base station—fiber only

XCU Elite Twin
XCU 1.5G dockable base station—triax and single fiber

XCU Elite Dual
XCU 1.5G dockable base station—triax and hybrid fiber

XCU Cradle
Additional XCU cradle for all XCU base stations

XCU XtremeSpeed XF Fiber
XCU with XF Fiber support and AnyLightXtreme flicker correction system

Camera Control
MCP 450
C2IP camera control system master control PC

OCP 400
C2IP camera control system control panel with joystick

Connect Gateway
C2IP camera control system XML gateway and diagnostics

Accessories
RefleX SuperXpander
Adapter for studio camera use

EyeCatcher 270
2.7-inch LCD color ocular viewfinder

LDK 5307
7-inch LCD color viewfinder

EyeCatcher 744
7.4-inch OLED HD color viewfinder

LDK 5309/10
9-inch LCD HD color viewfinder
Global Services

The true benefit of a camera solution is achieved through the design and implementation based on customer requirements. The ability to tailor the solution to meet specific operational needs and configure system components accordingly sets Grass Valley camera solutions apart from its competitors. Grass Valley Global Services provides the expertise and experience to help customers define their requirements and set expectations before deploying successful implementations.

Professional Services

System functionality and performance tuning requires understanding user requirements. The ability to specify technical needs, required interfaces, bandwidth and workflow needs requires an in-depth knowledge of both the technology and the environment. Our Professional Services organization includes systems engineers with the world’s highest level of this expertise. However, project success requires more than technical knowledge. To complete the picture, Grass Valley provides the project management expertise to capture specifications and to plan resources, schedule and budget. With this combination, the Grass Valley Professional Services team has the competencies and experience to insure success.

Commissioning

Grass Valley insures the success of camera solutions by personally handling the initial setup for every camera component of the system. Field engineers have the experience, knowledge and skills necessary to bring camera systems to life — both as a product set, and in the broader context of a complete solution.

Training

Grass Valley offers a range of professional training programs to help derive maximum value from Grass Valley cameras. Courses are designed for operators and maintenance engineers, with a combination of theoretical learning and hands-on exercises using Grass Valley cameras. Trainers are experienced in broadcast and in the operational and technical nuances of deploying a wide range of camera configurations.

Support Agreements

Uptime, risk and financial predictability are the hidden variables in total cost of ownership. The ability to manage these is what makes support agreements a cost-effective tool for business optimization. Grass Valley now offers an extended choice of support agreements. CamCare is a preventive maintenance service package based on periodic on-site visits at a pre-agreed schedule. CamCare aims at optimizing the health of camera inventories, minimizing the duration of service interruption and reducing repair time thanks to precise diagnostics. Elite Support Agreements provide 24x7 technical phone support, call center prioritization, service level objectives, advance parts exchange, software updates and upgrades (GV-eLicenses not included). Pick&Ship is a service included in Elite Support Agreements to simplify sending a camera in for repair for European Union customers. With Pick&Ship, Grass Valley reduces the repair turnaround time by managing the camera shipment logistics end-to-end, from pickup to delivery and back to customer facility. Pick&Ship is currently limited to European Union countries only. Camera support agreements insure that users have both operational efficiency and financial predictability.