

# LDX Training session 2016



**Introduction  
2015 / 2016**

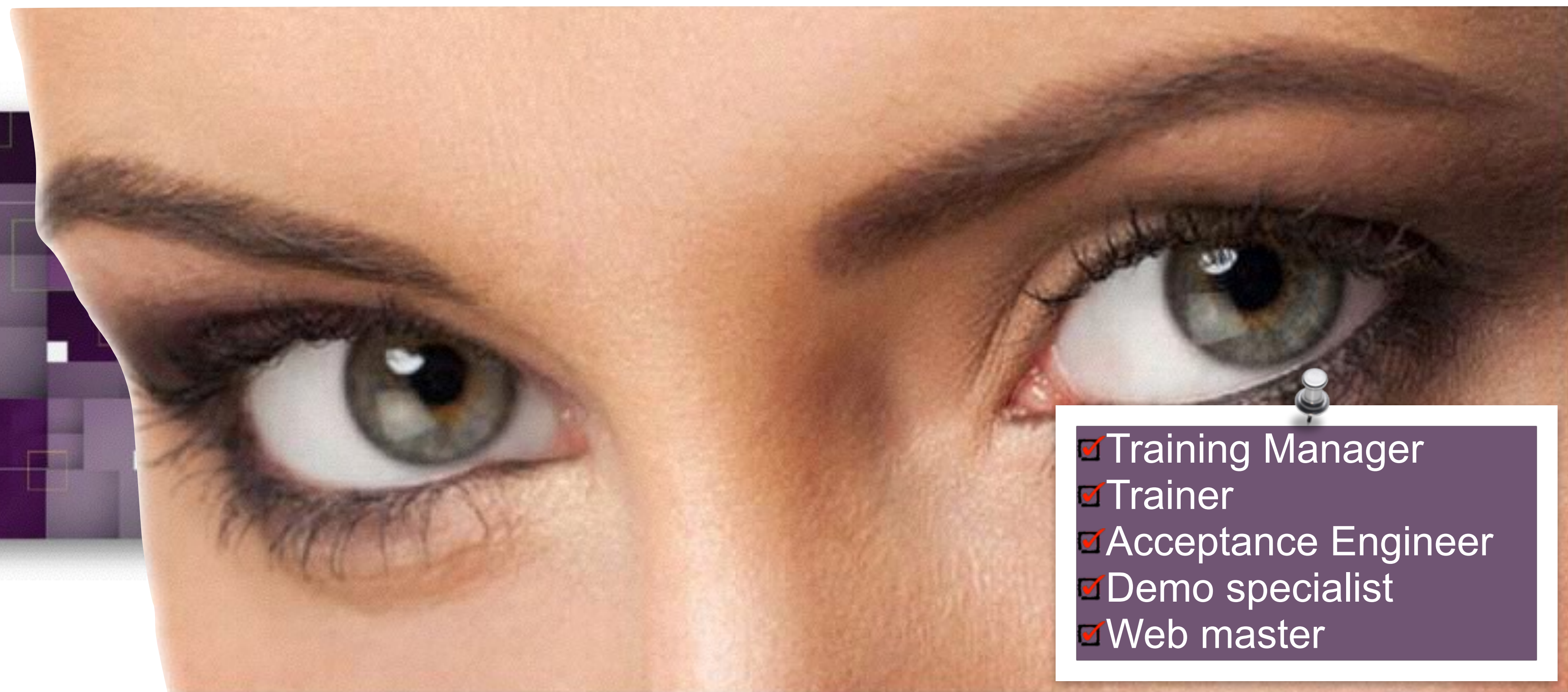
 **FUTURE-READY**



**grass valley**  
A **BELDEN** BRAND



# LDX Training session 2016



- ✓ Training Manager
- ✓ Trainer
- ✓ Acceptance Engineer
- ✓ Demo specialist
- ✓ Web master

- **Focus 70**
- **LDX 80**
- **LDX 86 HD/4K/XDR**
- **XCU XS IP**

 **FUTURE-READY**



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# This weeks program (day)

1

## LDX Introduction

- first 1/2
- \* Products overview (2015/16)
  - \* LDX basics and functional
  - \* LDX Features (ArtTouch)
  - \* LDX HS / 4K / XDR / CG
- second 1/2
- \* Hand-ON part
  - \* Discussions and Sharing information

2

## LDX in-depth features

- first 1/2
- \* Triax / Fiber 3G and 10G Transmission
  - \* XCU IP Basics (Development Support ?)
  - \* XDR session With development (11:00 - 12:00)
- second 1/2
- \* Telecast fiber systems
  - \* TAC Talk (Patrick) (14:00-15:00)
  - \* Hand-ON part
  - \* Discussions and Sharing information

3

## Advanced Service Procedures & Diagnostics

- first 1/2
- \* LDX Service and Diagrams
  - \* Package update & LDX Inside
  - \* Updates LDX (Hardware/Software)
- second 1/2
- \* Repair (soldering procedures?) (13:00-14:30)
  - \* Productmanagement. (14:30-15:30)  
- Sneak Preview NAB
  - \* Hands-On session

4

## Advanced Hands-on *Only on request for GV and ASP*

- first 1/2
- \* Hands-On session
  - \* Discussions and Sharing information
- Training finished (13:00)

# The rules for this week

1



During the presentations.



2



Running around the building

Stay on the ground floor.



3



Please Keep the Classroom and Studio clean.

4



Try to be interactive and have respect for each other

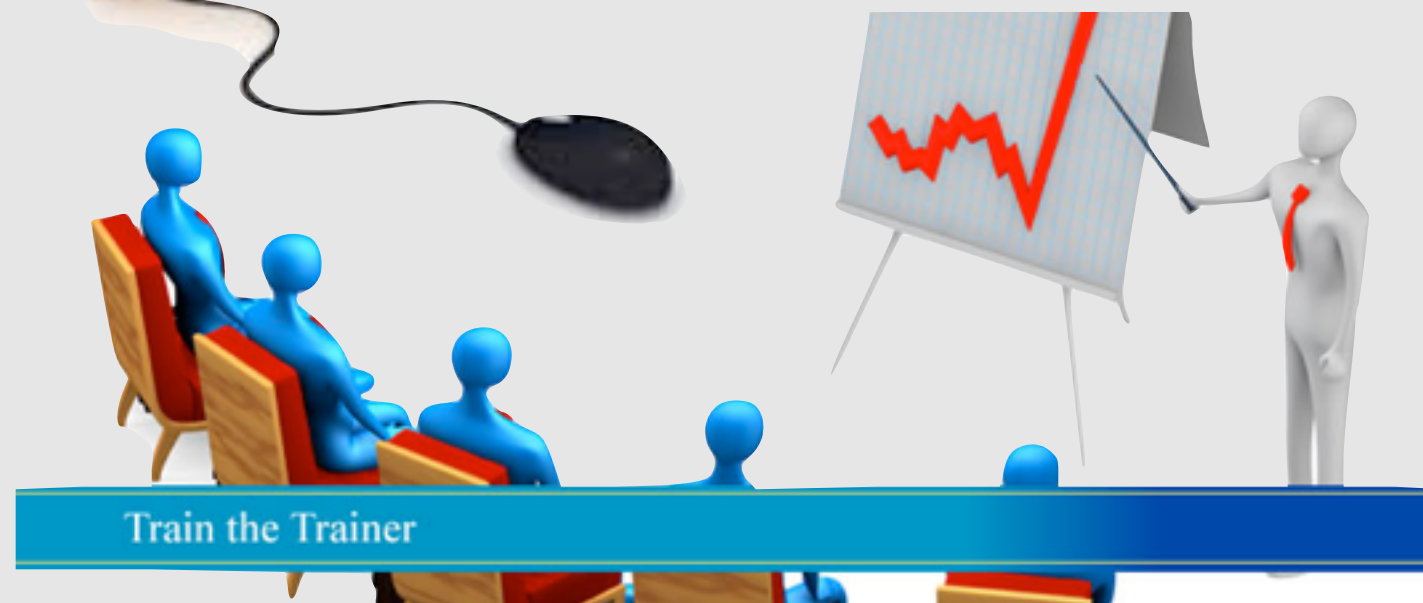


# Our task for this week

1



Evaluation  
Training  
Materials



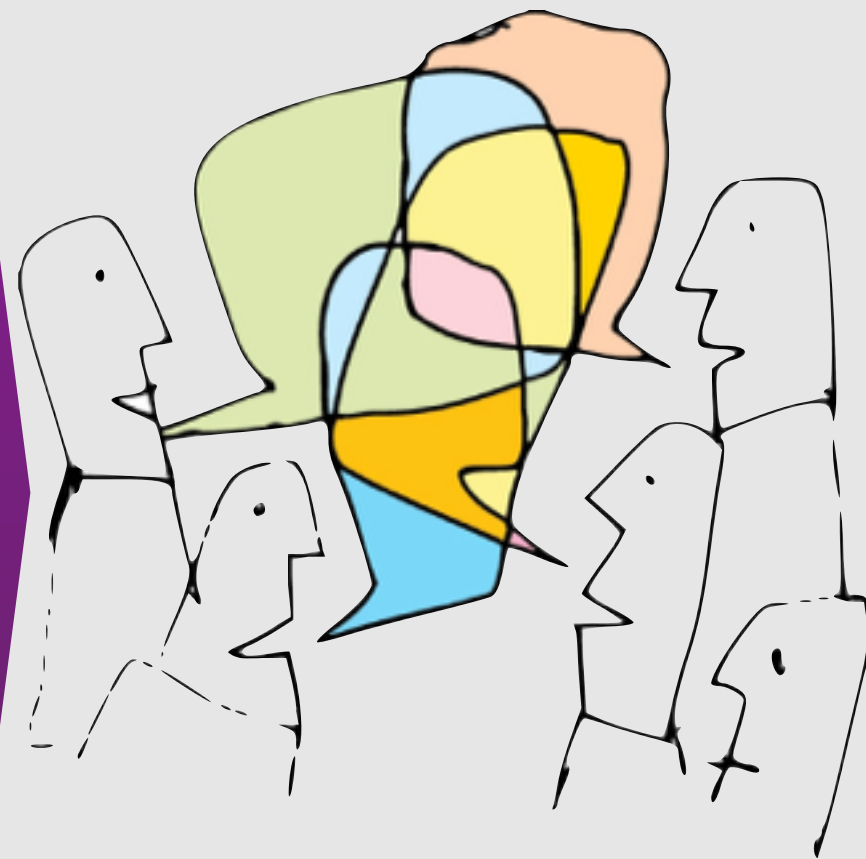
2



Sharing knowledge  
from all participants



3



Using the same  
voice and training  
materials when  
sharing information  
to our customers

4



Why wait for the weekend to have fun?  
**HAVE A NICE WEEK!**



# Grass Valley PRODUCTS overview



Breda



OCP / MCP



2,7inch VF



Cameras



Convertor



SXP



7 or 9 inch VF



XCU

## Cameras

- ✱ development Breda The Netherlands
- ✱ production in Hungary



# Grass Valley Breda The Netherlands. Training Center





# Overview LDX series

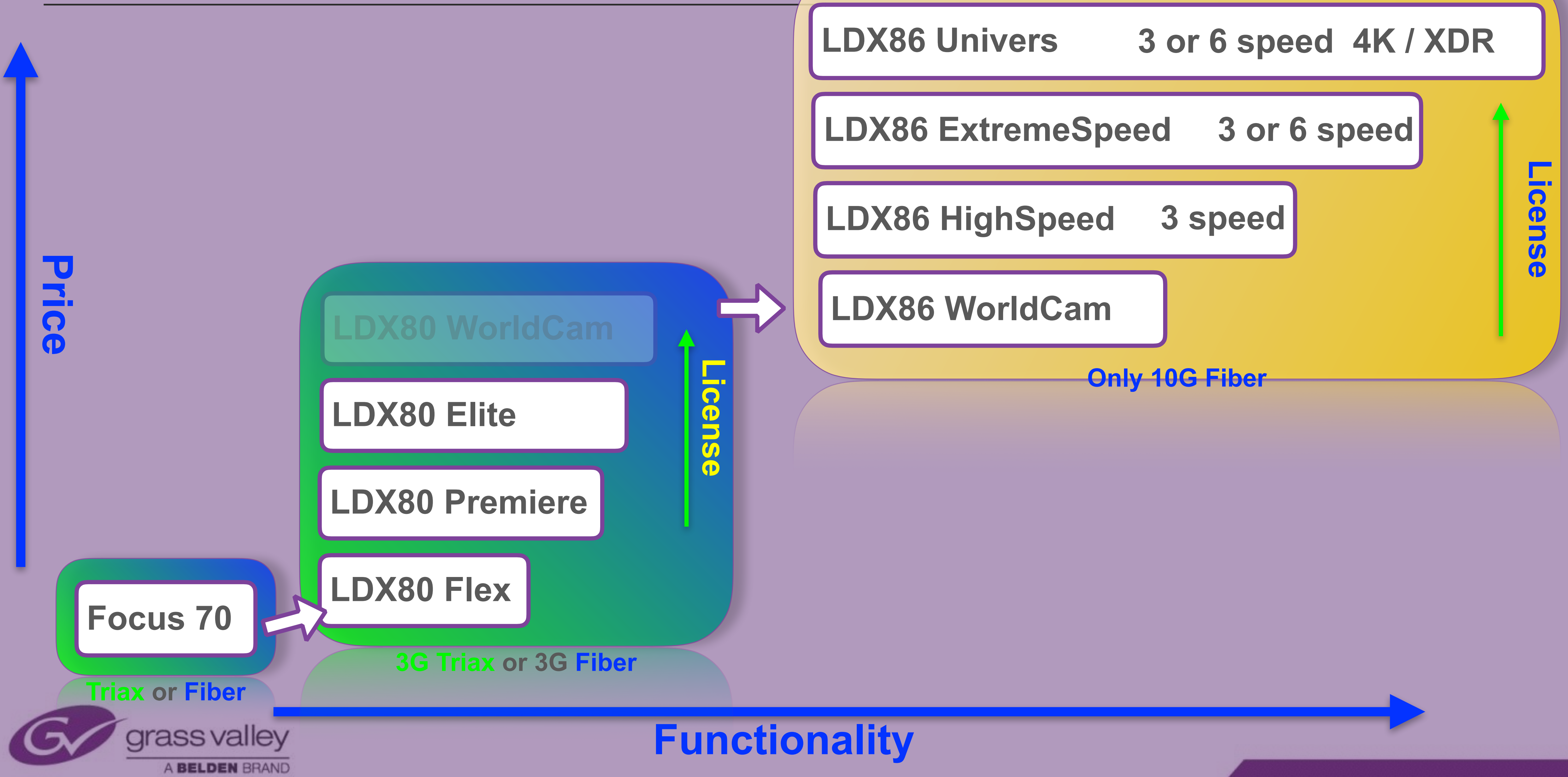
**This part gives you some more details from the LDX product line**

**In this session:**

- ◆ **Focus 70**
- ◆ **LDX 80 series**
- ◆ **LDX 86 series**
- ◆ **Controls**





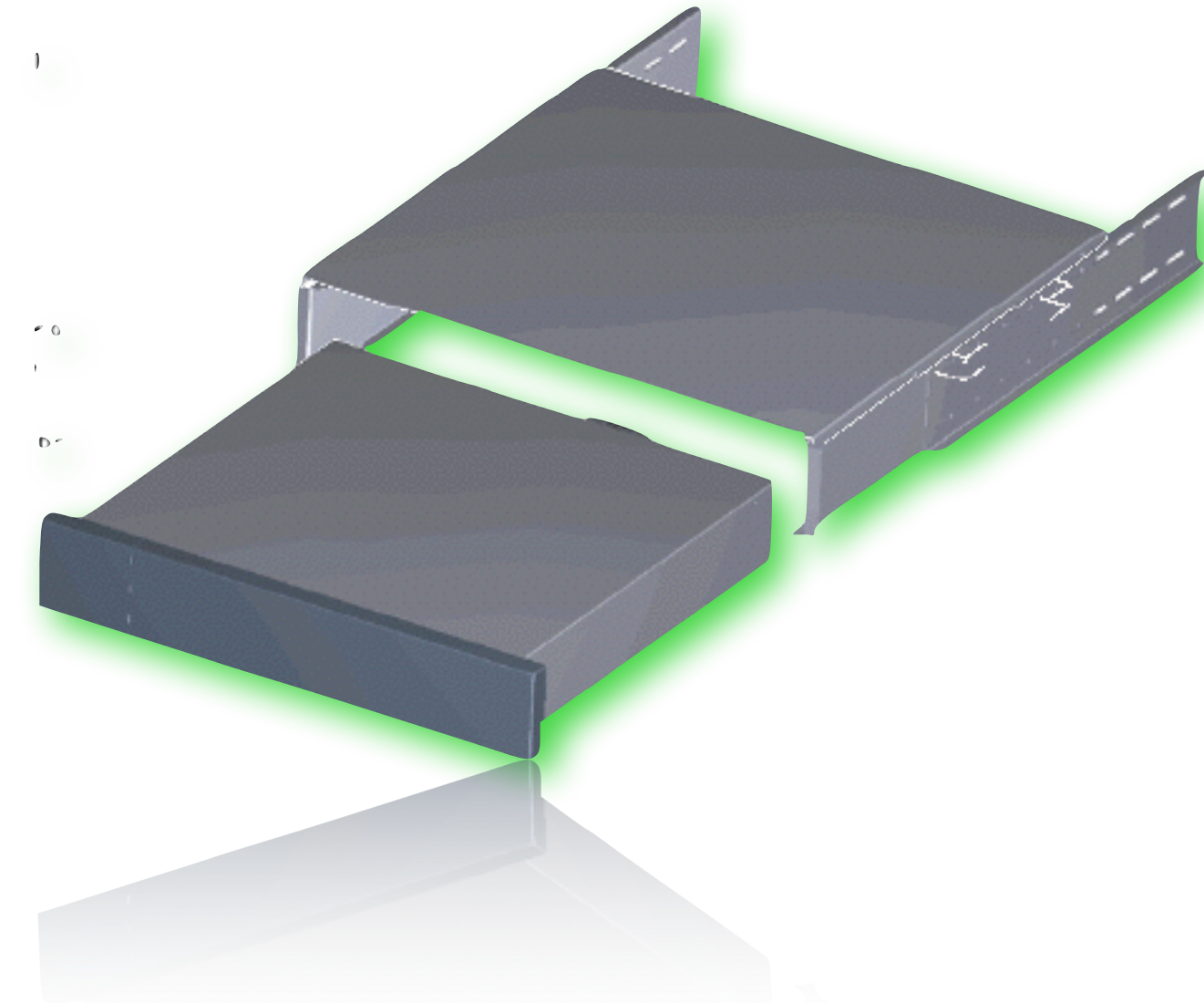














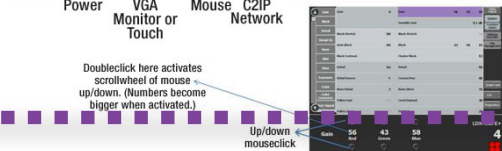








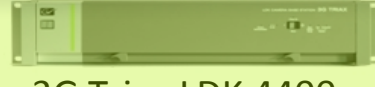




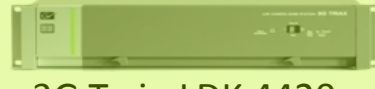


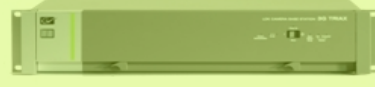

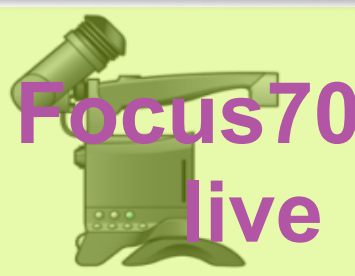













# LDX series

For our GV camera products, a number of Key Values have been defined, which will be respected going forward:

- ◆ Reliability
- ◆ Imaging, beyond imagination
- ◆ Cost-of-Operation centric view
- ◆ Format flexibility
- ◆ Cross-compatibility with the whole of GV
- ◆ Ergonomic design and human- interfacing





Lens and VF	Heads	SXP	Adapter	Converter	Base Station	Control
 Portable Lens	<b>Economic</b>  CMOS Head LDK 3000	<b>Analogue Triax</b>  SuperXpander LDK 4488 Xpander LDK 4489	<b>Economic</b>  Triax Adapter LDK 5630	 Triax Repeater LDK 4800	<b>Economic</b>  Triax Base Station LDK 4580	<div> MCP 400 LDK 4510</div> <div> OCP 400 LDK 4640</div> <div> LDK Connect Gateway LDK 4637</div> <div> MCP450</div> <div></div>
 Box Lens	 LDK 8000 Series		<b>High End</b>  HD Triax Adapter LDK 5861		<b>High End</b>  Analogue Triax Base Station LDK 4502	
 2" CRT VF LDK 5302		 Reflex SuperXpander LDK 4475	 3G Triax + Fiber Adapter LDK 5418 / LDK 5420	 3G Fiber Power Box LDK 4425	 3G Triax LDK 4400	
 2.7" LCD VF EyeCatcher 270	 LDX Series		 3G Triax + Fiber Adapter LDX5640 / LDX5650	 3G Triax to Fiber Converter Box LDK 4426	 3G Twin LDK 4420	
 7" LCD VF LDK 5307/00		 LDX80			 3G Fiber LDK 4410	
 9" LCD VF LDK 5309	 Focus70 live Triple Speed Head	 Focus adaptor	 3G Fiber to Triax Converter Box LDK 4427	 XCU Triax XCU 4200		
 7" CRT VF LDK 4021				 XCU Fiber XCU 4210		
 7" LCD VF LDK 5307/40	 LDX86	 XF Fiber adaptor LDX5660	 XF Fiber XCU XCU4280	 3G HS Base Station LDK 4430		
				 OLED LDK5307/40	 XCU Dual XCU 4220	
	<b>High End</b>	<b>3G Fiber 10G</b>	<b>3G Fiber 10G</b>	<b>3G Transmission</b>	 XCU Twin XCU 4230	

Note: XtremeSp. support only 10G Fiber Transmission

Controls

XCU series

Focus BaseUnit



# Grass Valley Cameras at a glance

	Entry Level <i>Focus 70 Live</i>	Mid Range <i>LDX 80 Series</i>	High End <i>LDX 86 Series</i>
<b>Flexibility</b>	Low	High / upgradable via eLicenses	
<b>Format support</b>	Single format HD	Single format to multi-format HD	Multi-format HD to 4K
<b>Speed support</b>	1x speed HD		1x speed HD up to 6x speed HD
<b>Features</b>	Limited fixed	Limited to fully featured	Always fully featured
<b>Transmission</b>	Triax or Fiber	3G Triax and Fiber, XF Fiber	
<b>Future additions</b>	No	Limited	Yes / fully future proof
<b>XDR capable</b>	No		Yes / optional
<b>Extended color gamut</b>	No		Yes / standard



# Focus 70 live

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Datasheet

## Focus 70 Live

Highly Affordable HD System Cameras





# Focus 70 live

## LDX Series Format Support

		Focus 70		LDX 80 Series			LDX 86 Series				
		720p 50/59Hz	1080i 50/59Hz	Flex	Première	Elite	WorldCam	4K	Universe	XtremeSpeed	HiSpeed
HD	720p	★									
	1080i		★								
	1080PsF										
	1080p										
High-Speed	3x 1.5G										
	3x 3G										
	6x 1.5G										
4K	4K										



# Focus 70 live

## Features Table

		LDX Flex	Focus 70
Imager		Xensium-FT	Xensium-FT
Sensitivity		F12 (50 Hz) / F11 (59.94 Hz)	F12 (50 Hz) / F11 (59.94 Hz)
S/N-ratio		60dB	60dB
Video modes		1080i or 720p	1080i or 720p
Sensitivity modes		nominal	nominal
Transmission solutions		3G Triax, 3G Fiber	1.5G Triax or Fiber
→ 3G Convertor Box compatible		Yes	No ←
→ RF-Interface assy compatible		Yes	No ←
→ Reflex SuperXpander support (hotshoe)		Yes	No ←
→ Zoomcontrol in handgrip		Yes	No ←
Side grip		No	No
CLASS		Basic	Basic
Power curve gamma control		No	No
DoF indicator		No	No
Reverse scan (Horizontal / Vertical flip)		No	No
Skin Detail		Yes	Yes
Contour equalizer		Yes	Yes
Color protect preset		Yes	Yes
Color protect variable		Yes	Yes
Knee Dynamic Curves variable		Yes	Yes
→ Horizontal and Vertical shift		No	Yes ←
Secondary color correction		2 sets	2 sets



# Focus 70 live



Light Green  
Triax

Light Blue  
Fiber

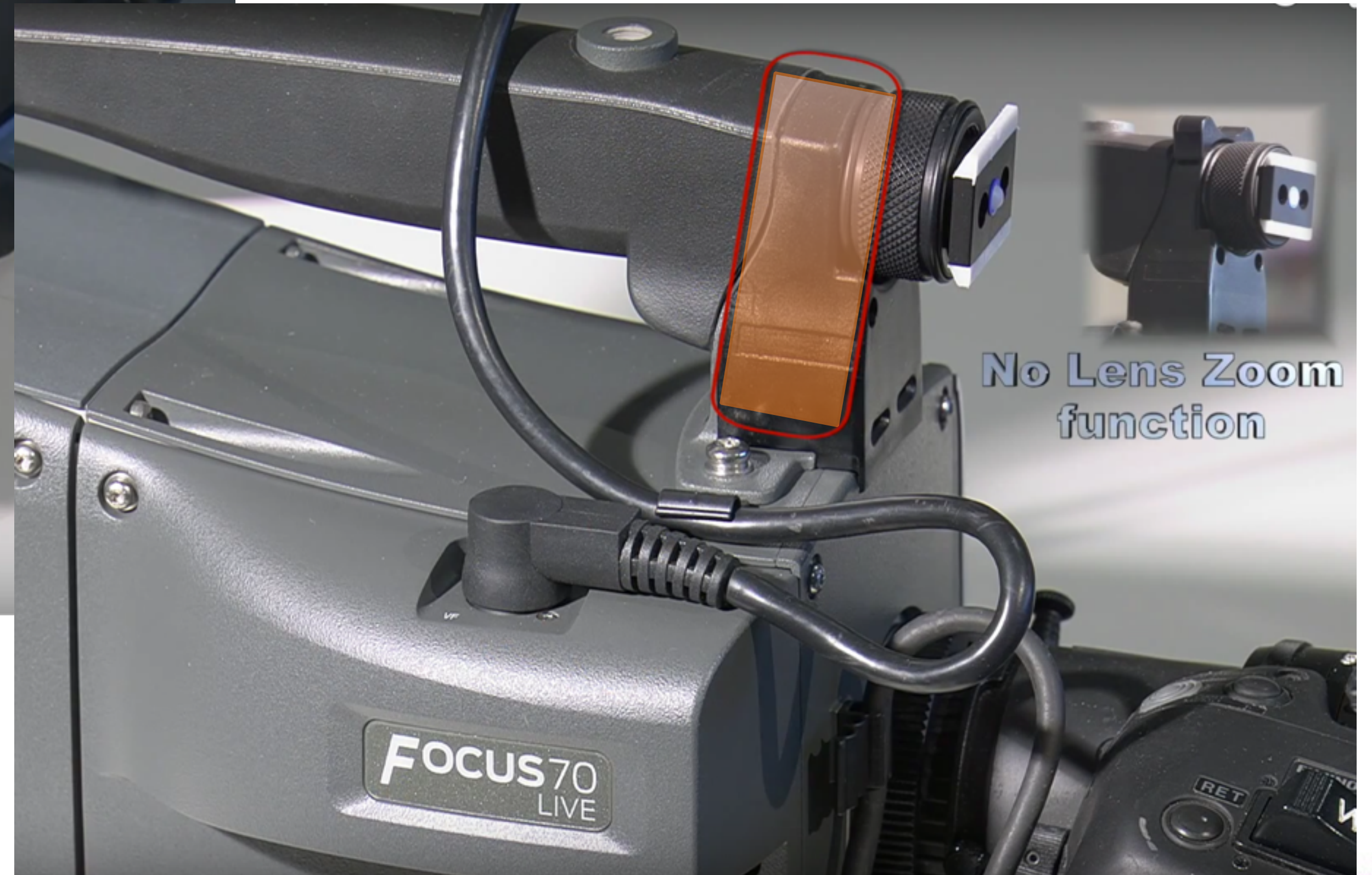




# Focus 70 live



- \* No Power Connections (No local power)
- \* No Tracker
- \* No local TP / REF and Ethernet on adaptor  
TP switchable on back panel
- \* No Lens and Zoom control
- \* No SXP support



**Not compatible with LDX series**



# Focus 70 live

External 1,2  
no EXT 3

No Output C  
No Output live D

X = Not active





# Introduction LDX series

## The LDX series Camera



### Build on 4 pillars

- Business flexibility
- Operational excellence
- Imaging, processing and performance
- Solutions that matter

- ❖ One family , We're tearing down old broadcast boundaries, offering unsurpassed flexibility
- ❖ We understand the show must go on, regardless the operational **challenges** you face on a daily basis. Our mission is to make it an **ergonomic** place as well.
- ❖ Xensium FT imaging, True Texture 1080P from sensor (High speed future)
- ❖ We understand your operational challenges and have the broad portfolio to build bridges, offering you solutions that matter



# Introduction LDX series

## The LDX series **Camera**

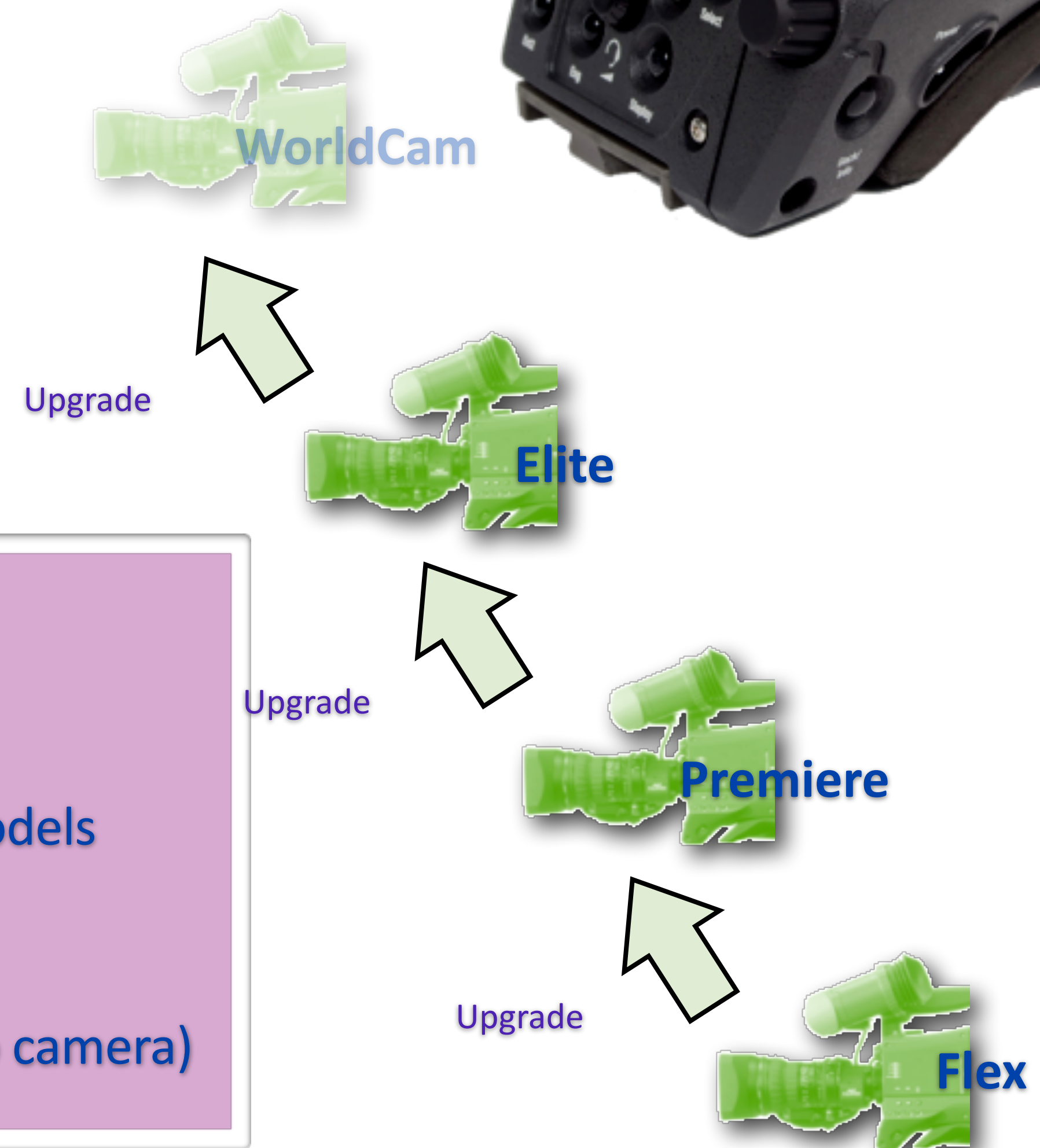
LDX available in 4 -> 3 versions

- ❖ LDX Flex
- ❖ LDX Premiere
- ❖ LDX Elite
- ❖ *LDX WorldCam*

**new  
FOCUS 70**

### e-Licenses

- ❖ Licenses are one-step incrementals  
This enables the path towards buying bulk licenses, while the customer has many different flavors of models
- ❖ Licenses are available via the sales channels
- ❖ Licenses are available for long and short periods
- ❖ Licenses are downloadable files (from USB or FTP to camera)





		<i>Flex</i>	<i>Première</i>	<i>Elite</i>	<i>WorldCam</i>
Imager		Xensium-FT			
Sensitivity @2000 lux 89.9% reflectance	1080i/720p/1080p	F12 (50 Hz) / F11 (59.94 Hz)			
	1080PsF	F18 (25 Hz) / F16 (29.97 Hz)			
S/N-ratio		60dB			
Video modes		1080i or 720p	1080i and 720p	1080i/720p/1080psf	1080i/720p/1080psf/1080p
1080p with full sensitivity		No			Yes
Effects filter wheel		No	Yes		
ComfortPad		No		Yes	
Side Grip		No		Yes	
CLASS		Horizontal	Horizontal and vertical		
Dynamic aperture correction		No	Yes		
Dynamic contour equalizer		No	Yes		
Reverse scan (hor./vert. flip)		No	Yes		
Power curve gamma control		No		Yes	
DoF indicator		No		Yes	
Secondary color correction		2 set		6 set	



# Introduction LDX series

## The LDX series Camera

The LDX camera head is for the video processing mainly based on the LDK8000 Elite camera.

### Main differences:

(Mostly explained in **Session 2 Basics and Features**)

- **Xensium FT imager**
- New video functions
- Lens corrections
- New leaking pixel corrector "TrueTexture".
- Improved LED-wall artifact compensation.
- New menu structure with rotary knob
- Changed button layout
- More user friendly interface.
- "Art Touch".
- Diagnostics
- New mounting method camera <-> adaptor





# Introduction LDX series

New products for 2014/2015



SXP LDK 4475



XCU 4200 Triax

XCU 4210 Fiber

XCU 4220 Dual

XCU 4230 Twin

XCU 4280 XF Fiber

XCU IP XF Fiber



3G Triax Adaptor LDK 5640  
3G Fiber Adaptor LDK 5650  
10G Fiber Adaptor LDX 5680



### Adaptors Fiber and Triax

#### 3G & 10G Adaptor for LDX only

- ◆ Triax (**Green**) - LDX 5640
- ◆ Fiber (**Blue**) - LDX 5650
- ◆ Fiber (**Yellow**) - LDX 5660
- ◆ New docking connector type used for LDX
- ◆ New mounting method for LDX

#### With LDX

■ **3G** is Third Generation Transmission

- |                         |           |
|-------------------------|-----------|
| 1: Analog RGB           | 1990-2000 |
| 2: Analog component     | 2000-2013 |
| 3: Digital Transmission | 2013- now |

#### With LDX

■ **3G** is Third Generation Transmission

4,5 G fiber for 1080i or 1080p  
3 speed LDK8300

#### With LDX 86

■ **10G** XF adaptor

- 1: for 1 , 3 , 6 speed
- 2: for 4K
- 3: for XDR





# Introduction LDX series



LDK 4425/26/27/29



MCP450  
LDK Connect server  
LDK 4673



# LDX 86 series GrassValley

## LDX 86 Series - With XDR

**LDX86**  
UNIVERSE



GAME CHANGING  
**6x / 4K / HD / XDR**  
acquisition

*Extended Dynamic Range*

True HDR:  
unmatched 15 F-stops  
of dynamic range



# LDX86 HD/4K XS



## LDX 86 4K

3840x2160p50/59.94 &  
1080p50/59.94 &  
1080PsF23.98/24/25/29.97 &  
1080i50/59.94 & 720p50/59.94



## LDX 86 Universe

(HD: 1X/3X/6X)  
(3G: 1X/3X)  
(4K: 1X)  
3840x2160p50/59.94 &  
1080p50/59.94/150/179.82 &  
1080PsF23.98/24/25/29.97 &  
1080i50/59.94/150/179.82/300/359.64 &  
720p50/59.94/150/179.82/300/359.64



## LDX 86 XtremeSpeed

(HD: 1X/3X/6X)  
(3G: 1X/3X)  
1080p50/59.94/150/179.82 &  
1080PsF25/29.97 &  
1080i50/59.94/150/179.82/300/359.64 &  
720p50/59.94/150/179.82/300/359.64



## LDX 86 WorldCam

1080p50/59.94 &  
1080PsF23.98/24/25/29.97 &  
1080i50/59.94 & 720p50/59.94



## LDX 86 HiSpeed

(HD: 1X/3X)  
1080i50/59.94/150/179.82 &  
720p50/59.94/150/179.82

Higher Resolution

Ultimate  
Flexibility

Higher Frame Rate



# LDXseries GrassValley

		Upgradability via eLicenses				
		WorldCam	4K	Universe	XtremeSpeed	HiSpeed
LDX 86 Series	HD	720p				
		1080i				
		1080PsF				
		1080p				
High-Speed		3x 1.5G				
		3x 3G				
		6x 1.5G				
4K		4K				



# LDXseries Operational Differences

	<i><b>LDX 80 WorldCam</b></i>	<i><b>LDX86 Universe</b></i>	<i><b>Other products needed</b></i>
<i><b>Video Modes</b></i>	- 720p/1080 I or P also psf mode	- Standard (see LDX 80) - HighSpeed 3 or 6x - 4K 4 Quadrant or 2 pixel interleave - XDR (License)	In Extreme or HighSpeed Summit / Dyno In XDR (XDR Monitor) In Wide Gamut (Monitor)
<i><b>BNC outputs</b></i>	- 6 x standard I or P - 2x live 720p or 1080i	- Standard (see LDX80) - 3x2 HighSpeed outputs - 3 fase interlace - 3 fase 1080P - 6 fase interlace - 2 x live (Combined)	
<i><b>AnyLight</b></i>	not available	Available in HighSpeed - Optimal - Good - Fair - Poor - Extreme	
<i><b>XCU Display</b></i>	Basic	Extended	HD Text Output monitor



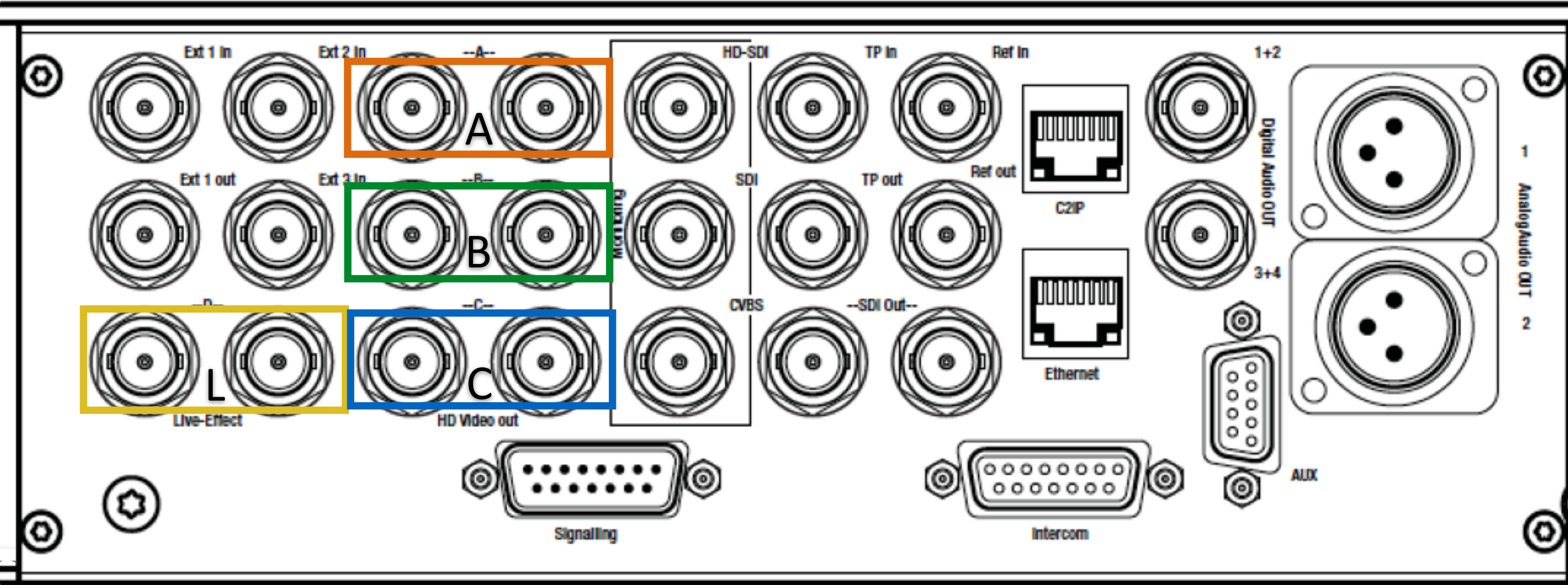
# LDX86 HD/4K XS XDR





# LDX86 HD/4K XS XDR

## XCU Outputs



Video Format	Output A	Output B	Output C	Live-out	Monitoring
1080P150/179	Phase 1 (3Gb/s)	Phase 2 (3Gb/s)	Phase 3 (3Gb/s)	Live (3Gbit/s)	Live (1.5Gbit/
1080I150/179	Phase 1 (1.5Gb/s)	Phase 2 (1.5Gb/s)	Phase 3 (1.5Gb/s)	Live (1.5Gbit/	Live (1.5Gbit/
1080I300/359	Phase 1+2 (3Gb/s)	phase 3+4 (3Gb/s)	Phase 5+6 (3Gb/s)	Live (1.5 Gbit/	Live (1.5Gbit/
720P150/179	Phase 1 (1.5Gb/s)	Phase 2 (1.5Gb/s)	Phase 3 (1.5Gb/s)	Live (1.5Gbit/	Live (1.5Gbit/
720P300/359	Phase 1+2 (3Gb/s)	phase 3+4 (3Gb/s)	Phase 5+6 (3Gb/s)	Live (1.5 Gbit/	Live (1.5Gbit/
4K 50/59	Q1 (3Gb/s)	Q2 (3Gb/s)	Q3 (3Gb/s)	Q4 (3Gb/s)	Live (1.5Gbit/
XDR 1080/720	XDR	XDR	XDR	SDR (HD)	SDR(HD + text)



# LDX86 HD/4K XS XDR

Hold 2 seconds  
to enter menu

XF Fiber

New menu control with XCU display



Make selection!

► Change camera number  
Menu (Monitoring)  
Menu (XCU display)

◀ Back      Select ▶

XCU Menu control

◀    ▲    ▶

▼

Hold ◀ to Exit



Root

► Menu off  
Video  
Monitoring  
Audio/Intercom

◀      exec ▶



XCU Type: XCU4280XF  
XCU PID: 037W67

Package: OK  
12NC: 6455  
Version: v02.00

02      Status

Extern 1: No  
Extern 2: No  
Extern 3: No  
TP: None  
Reference: 1080i50  
Gen Lock: Yes

02      Signals

Fiber A  
Cable    OK  
Signal    OK

Fiber B  
Cable    OK  
Signal    OK

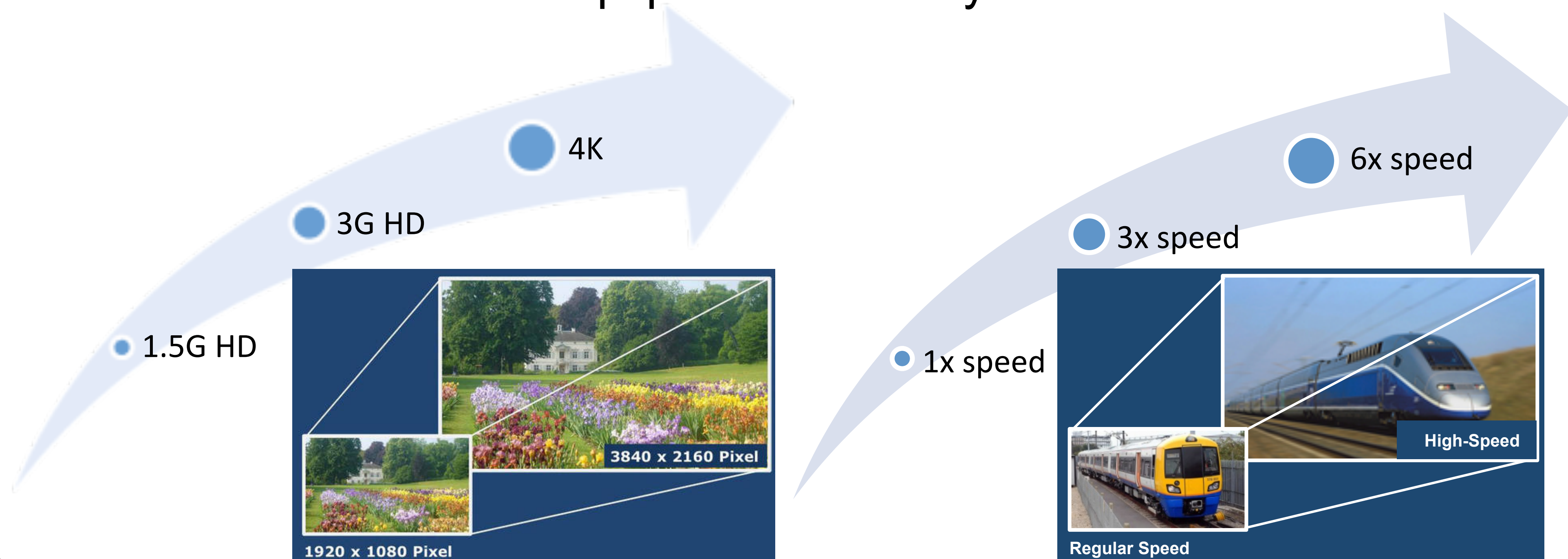
02      Transmission



# LDX86 HD/4K XS XDR

## Grass Valley Solution - Flexibility & future readiness

- ❖ How can I handle all the various production needs, HD, 4K or XtremeSpeed operation, and secure a high utilization of the equipment from day 1?





# LDXseries GrassValley (Compatibility)

