



A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema

Panamorph[®]
We bring cinema home

A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home



THE BASICS - IT'S ABOUT MOVIES. 80% of the most popular movies are made in the UltraWide 2.4:1 aspect ratio for commercial theaters. To fit on a 16:9 screen or flat panel these movies are shown between black bars created by turning off 2+ million display pixels.



Zooming a movie up onto a 2.4:1 projection screen just puts those unused display pixels on the wall.



Today's projectors can upconvert movies to repurpose the unused display pixels for the image instead.



An anamorphic lens reformats the movie into the cinema shape while preserving the added brightness and quality from 2+ million new pixels.

A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

ANAMORPHIC 4K/4096 DIGITAL CINEMA RESOLUTION – HOW TODAY GOT HERE

- 1999 – 2006 Panamorph lenses are used to convert 4:3 projectors to the 16:9 format.
- 2007 – 2009 Runco and other projector manufacturers add Panamorph lenses to 16:9 projectors with external upconversion processors for higher 2.4:1 movie brightness and quality.
- 2010 – 2014 Most 1080p home theater projectors now include internal anamorphic upconversion processing modes for 2.4:1 movies while moving the lens away for 16:9 content.
- 2015 – 2017 New 4K projectors begin offering anamorphic modes for both movies and 16:9 content without moving the lens, but processing power does not support 4K/UHD.
- 1Q/2018 Panamorph introduces the patented, fixed Paladin DCR lens supporting full anamorphic commercial cinema resolution up to 8K.
- 4Q/2018 Sony and JVC launch 4K/4096 projectors with integrated processing modes which work with Panamorph's fixed DCR lens, maximizing 2.4:1 movie HDR brightness and supporting display pixel counts exceeding that of flat panels and commercial theaters.

A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

WHAT ABOUT WATCHING 16:9 CONTENT IN AN ULTRAWIDE THEATER? Today's projectors provide a single button on a remote to cycle between the three primary modes for any content – movies or TV - with the Panamorph lens always in place. All instantaneous. No moving parts.

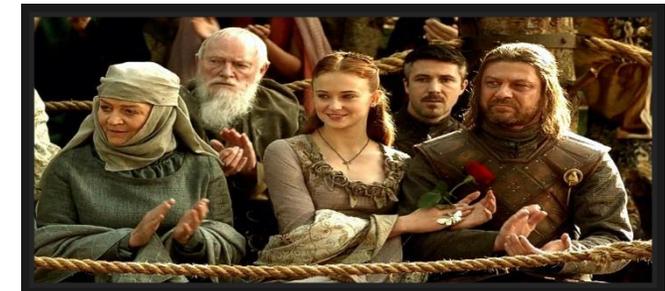
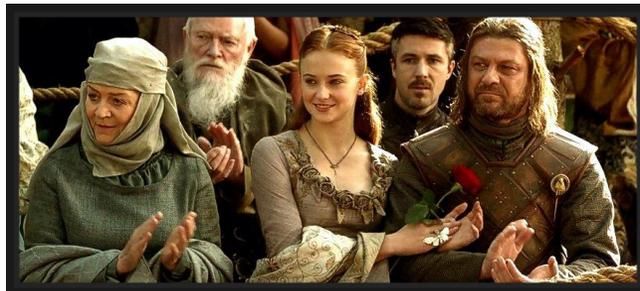
UltraWide Mode



TV Mode



Full (off) Mode



A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

ANAMORPHIC HOME CINEMA DESIGN GUIDELINES

SCREEN	2.4:1 ratio. Flat. Standard border. Note: You may have heard of 2.35:1. This is a very old format. Always ask for the 2.4.1 aspect ratio.
THROW DISTANCE	Paladin DCR: At least 1.4 x Screen Width. Paladin: At least 1.6 x Screen Width.
PROJECTOR PLACEMENT	Vertical: Generally around the top of the screen – not that critical. Horizontal: Stay close to the center of the screen for best geometry.
MOUNTING	XM2 is almost always the answer for attaching the lens to the projector. If the projector is shelf mounted you can invert a Paladin lens in it's bracket.
HOW TO WATCH CONTENT	Basic modes for all content are integrated into the projectors for a fixed lens. Check the compatibility pages at www.panamorph.com for more info.

A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

LENS SPECIFICATIONS	Phoenix	Paladin	Paladin DCR
Patented cylindrical-prism technology	1.33x Horizontal Expansion (sealed)	0.75x Vertical Compression (sealed)	0.80x Vertical compression (sealed)
Throw distance range	12' – 24' (3.6m – 7.3m)	12' to 36' (3.6m – 11m)	12' to 36' (3.6m – 11m)
Min throw distance	1.6 x screen width	1.6 x screen width	1.4 x screen width
Vertical projector position	Any screen height +/- 15% of screen height	Top or bottom of screen +/- 15% of screen height	Top or bottom of screen +/- 15% of screen height
Horizontal projector position	Centered with minimal or no horizontal lens shift	Centered with minimal or no horizontal lens shift	Centered with minimal or no horizontal lens shift
Mounting orientation	Suspended or shelf mount	Suspended or shelf mount	Suspended or shelf mount
Max edge distortion (at lowest throw ratio)	0.005 x screen diag. at 1.6:1 UW throw ratio	0.005 x screen diag. at 1.6:1 UW throw ratio	0.005 x screen diag. at 1.4:1 UW throw ratio
Electronic Convergence Correction (Sony, Epson and JVC HT projectors)	Recommended for throw distance / screen width ratio under 2.2:1	Unnecessary	Unnecessary
Optimum screen aspect ratio	2.4:1 flat or curved	2.4:1 flat (adjustment for 2.35:1)	2.4:1 flat (adjustment for 2.35:1)
Attachment kit	Panamorph standard bracket with XM2 or XMU kit	Panamorph standard bracket with XM2 or XMU kit	Panamorph standard bracket with XM2 or XMU kit
Projector resolutions supported	Up to 4K (UHD) in the 16:9 format	4K (UHD) up to 8K in the 16:9 format	4K (4096) to 8K in the 17:9 cinema format
UltraWide UHD movie enhancement vs. native letterbox	20% increase in brightness from 2+ million more pixels	29% increase in brightness from 2+ million more pixels	38% increase in brightness from 2.5+ million more pixels
Mode I required for UltraWide UHD movies	4/3 vertical stretch	4/3 vertical stretch	4/3 vertical stretch + 16/15 horizontal stretch
Mode II required for 16:9 and 1.85:1 UHD movies in native format in center of screen	3/4 horizontal squeeze	3/4 horizontal squeeze	4/5 horizontal squeeze
Mode for stretching smaller content to fit 2.4:1 screen	“off” or “normal” mode (no anamorphic conversion)	“off” or “normal” mode (no anamorphic conversion)	16:15 horizontal stretch
Size (lens only)	5.1" W x 4.5" H x 5.8" D (129 x 114 x 146 mm)	6.5" W x 5.7" H x 4.5" D (165 x 145 x 114mm)	6.5" W x 5.7" H x 4.13" D (165 x 145 x 105mm)
Weight (lens + bracket)	2.8 pounds (1.3 Kg)	3.6 pounds (1.63 Kg)	3.6 pounds (1.63 Kg)
Warranty	Two years	Two years	Two years

A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

ATTACHMENT KITS

- Included with all lenses – your choice of XM2 or XMU.
- **XM2** very quickly attaches to the Panamorph threaded holes in most JVC and Epson projectors and the ceiling mount holes in most Sony projectors. It can also be sandwiched between the projector and ceiling mount for larger projector models. The XM2 is the most popular attachment system by far.
- **XMU** is more universal to work with any projector mounted with a Chief RPA ceiling mount (not included).



XM2



XMU



A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

COMMON Q&A

What should I know about distortion? Distortion is a geometric change from a perfectly rectangular image that is most noticeable at the edges. The Paladin (and Paladin DCR) will curve the image slightly in at the corners (“barrel” distortion) whereas the Phoenix will curve the image slightly out at the corners (“pincushion” distortion). **Distortion decreases** as the **UltraWide throw ratio increases** (throw distance divided by UltraWide image width). However, even at the lowest recommended UltraWide throw ratio of 1.6:1 (1.4:1 for DCR) the amount of curvature along any edge will be less than 0.005 times the screen diagonal. When this small amount is absorbed by a deep black screen border any distortion in the image becomes invisible. Some projector models include distortion correction if necessary (see compatibility pages).

Does a fixed anamorphic lens limit 16:9 performance? Anamorphic cinema preserves the full 2160 vertical resolution of 16:9 4K content while only 3,072 horizontal pixels are used in the horizontal direction. However, broadcast TV resolution is often already constrained so the difference is often unnoticeable. And if you watch TV in the other modes to fill your screen you are still getting the full 3840 horizontal detail.

A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

COMMON Q&A (continued)

What about a curved screen? Curved screens naturally create barrel distortion at the top and bottom edges of the image, typically of about 0.006 times the screen height. We do not recommend curved screens with Paladin lenses because the two barrel distortions combine to create greater barrel distortion. However, with an UltraWide throw ratio of around 1.8:1 and above the combined distortion can still be absorbed/masked by a deep black screen border to be virtually invisible in movies. On the other hand, the pincushion distortion of the Phoenix can somewhat cancel out the barrel distortion of a curved screen.

Will a Panamorph lens work with this projector? Please see the Panamorph compatibility guides.

How does anamorphic UltraWide compare to the memory zoom method? Among other issues, memory zoom limits 4K UltraWide movie performance because millions of display pixels are turned off to show the black bars on the wall. For more information on this topic please see the [website blog](#).

A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

COMMON Q&A (continued)

“2.4:1”? Isn't it “2.35:1”? **What actual screen aspect ratio should I order?** Always order a 2.4:1 screen. 2.35:1 movies stopped being made in the early 1970s. Unfortunately “2.35:1” took off some years ago as a generalized expression for UltraWide movies even though the actual aspect ratio is typically 2.39:1 or 2.4:1. It's certainly not worth changing out current installs, but for future projects please consider 2.4:1. For more information about aspect ratios see the [blog page](#) on the Panamorph website.

How do I buy as a dealer? All established and authorized home theater projector dealers are automatically considered as Panamorph dealers subject to the terms and conditions upon registering with the on-line [Dealer Portal](#).

Does upconversion actually add detail? While there is no true extra detail extracted from content sources, today's upconversion algorithms predict extra detail so well that the millions of additional pixels in anamorphic cinema can actually increase the clarity as well as the brightness of the image.

A Dealer's Intro to Anamorphic UltraWide 4K Home Cinema



Panamorph[®]
We bring cinema home

MAKE IT REAL WITH THE ON-LINE PANAMORPH DEMO THEATER

- www.panamorph.com/pdt
- Fully interactive demonstration of how Paladin and Phoenix lenses work with different content and the three projector modes (UltraWide, TV and Full/Off).
- “Walk through” provides tutorials to answer the most popular questions.
- Great for you to get familiar with how the lenses work in every scenario.
- Great for clients to personally experience how an anamorphic UltraWide cinema works at their own pace to make it familiar and to build excitement.

Panamorph[®] We bring cinema home

HOME LENS OPTIONS SHOWROOMS ABOUT DEALER PORTAL

Panamorph Demo Theater[®] WALK ME THROUGH THIS! 16:9 FRAME ON/OFF

Total light on screen 100 % MAX 100 Total pixels on screen

PROJECTOR SETUP
projector zoom / shift / focus
Fill Screen Height Fill Screen Width UltraWide Movies

CONTENT SAMPLES
click the active button for other samples
regular content TV (16:9) Content

PROJECTOR MODE
display options through remote
UltraWide TV OFF

anamorphic lens model utility content
Paladin Phoenix No Lens Menus Test Pattern