

CHRISTIE®

CHRISTIE CINEMA PROJECTOR LENS GUIDE

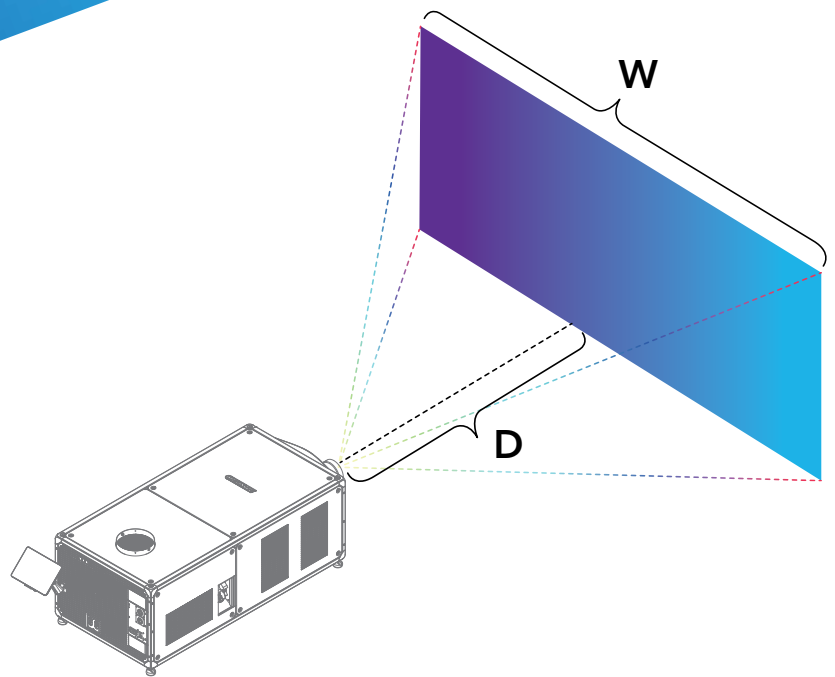
Light your screen with the right lens
for your cinema projector

christiedigital.com/cinema

We usually cover the technology behind the lens, but the cinema lens is one of the most underrated heroes in image quality. A vital part of the projector, a cinema lens works closely with the DLP® light engine to optimize the image that comes from this unique, extremely high-tech imaging system. Each precision telecentric lens is made of many lens elements that are dust-sealed to efficiently take the image from within the DLP cinema projector and present it perfectly on your screen. With the right lens, you can make the image fit your screen and have options for higher contrast.

What's lens "throw ratio"?

The throw ratio of each DLP cinema lens is the ratio of the distance between the projector's lens and the screen to the screen width. Each lens is designed to provide a magnification specific to size of the imagery (DMD chip) it's used with. Since the lens magnifies the image from the size of the imager to the size of the image on the screen, if you use the same lens, different imager sizes will result in different screen image sizes. We identify DLP cinema lenses by their throw ratio that directly relates to the imager size it's used with. The [Christie CineMaster cinema calculator tool](#) helps you select the right lens to fit your image on-screen in both flat and scope cinema formats.



$$\text{Throw ratio} = \frac{D}{W} = \frac{\text{Distance from lens to screen}}{\text{Horizontal width of screen}}$$

Typical lens model	Function
1.45-2.17:1 ZOOM	This lens zooms your image from a throw ratio of 1.45:1 (larger image) to 2.17:1 (smaller image)
1.39-1.90:1 ZOOM	This lens zooms your image from a throw ratio of 1.39:1 (larger image) to 1.90:1 (smaller image)
1.05:1 FIXED	This lens magnifies your image to a 1.05:1 throw ratio only

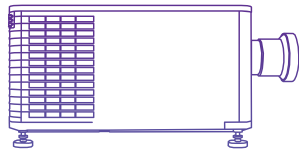
BRIGHTNESS AND CONTRAST: WHY DO WE NEED THEM AND WHAT'S THE TRADE-OFF?

Our standard high brightness lenses strike an optimal balance between brightness efficiency and contrast. We design our lenses with this brightness/contrast balance to offer exhibitors the best brightness performance and maintain or exceed the DCI specifications for cinema contrast. There are some tricks that can be done to lenses that take advantage of the way DLP technology works that improve contrast. However, the methods that enhance lenses' contrast can have an adverse effect on the efficiency of their brightness. Increasing contrast improves image quality as long as you can maintain brightness. Without enough brightness to support higher contrast, image quality suffers. Before you choose a higher-contrast lens, consider your available brightness. The CineMaster calculator helps by selecting a projector solution that will provide the required light level on the screen for the lens type you select. You can also use the CineMaster calculator to try different lens types and compare projection systems. Three categories of lenses—High Brightness (HB), High Contrast (HC), and Ultra-High Contrast (UHC)—give you options to tailor your system with 3 different contrast levels, possibly without having to use a different projector.

THE TRADEOFF BETWEEN CONTRAST AND BRIGHTNESS

Projector brightness output (high brightness lens)

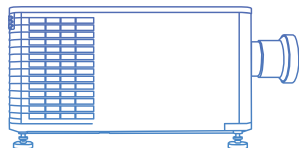
Least brightness required



- › Maintain 14fL min
- › DCI standard contrast

Projector brightness output (high contrast lens)

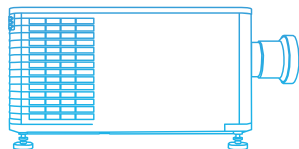
About 10% more brightness
required



- › Maintain 14fL min
- › 10% improved contrast

Projector brightness output (ultra-high contrast lens)

About 25% more brightness
required



- › Maintain 14fL min
- › At least 300%
improved contrast

THE PREMIUM DIFFERENCE FOR 4K CINEMA PROJECTORS

The standard suite of HB, HC, and UHC lenses are also available in a premium suite of lenses. With premium lenses, your 4K CineLife™ or CineLife+™ Series Real|Laser projector becomes an investment that can take on any setting. Premium Christie cinema lenses offer improved overall sharpness and reduces lateral color error.



High contrast (HC) lenses: High contrast for xenon projection

The HC lens suite has been around since the inception of digital projection, developed to boost contrast for xenon-illuminated projectors, anywhere from 10–20%. HC lenses are also compatible with Real|Laser cinema projectors and improve contrast anywhere from 30–40%.



**High brightness (HB) lenses:
Optimized for maximum brightness and efficiency**

The HB lens suite has also been around since the inception of digital projection and has been improved with new coatings that maximize brightness and system efficiency for both RGB pure laser and xenon platforms. When paired with a Christie Real|Laser or xenon projector, you can expect the best system efficiency for any cinema projector available on the market. We offer HB lenses for all Christie cinema projectors.

With Christie HB lenses, you'll enjoy:

- › Unbeatable wall plug efficiency of up to and >15 lumens/watt on Real|Laser illuminated projectors
- › Best in class system efficiency of up >5 lumens/watt for xenon projectors



**Introducing Ultra-High Contrast (UHC) lenses:
Triple the standard contrast for your projector**

Get the ultimate levels of contrast on an RGB pure laser projector without having to purchase an entirely different projector. Christie UHC cinema lenses are the most cost-effective way to boost contrast to your existing Real|Laser projector up to 6,000:1 by simply swapping out the standard HB lens.

With Christie UHC lenses, you'll enjoy:

- › 200% contrast improvement with Real|Laser projection
- › High Dynamic Range (HDR) that's capable of supporting the creative content of the future by expanding the range between the lightest tones to the darkest shadows

Note:

- › We offer UHC lenses for the 1.38" 4K and 0.98" 2K Real|Laser models
- › They aren't compatible with xenon projection

DESIGNED TO DELIVER ULTIMATE PERFORMANCE

Lens (2K)	Lens part number	Lens type
1.20-1.72:1 zoom (HB/2K/.69DLP)	108-494108-XX	HB
1.33-2.10:1 zoom (HB/2K/.69DLP)	108-495109-XX	HB
1.62-2.70:1 zoom (HB/2K/.69DLP)	108-496100-XX	HB
2.09-3.90:1 zoom (HB/2K/.69DLP)	108-497101-XX	HB
1.20-1.75:1 zoom (UHC/2K/.98DLP)	163-165103-XX	UHC
1.39-1.90:1 zoom (UHC/2K/.98DLP)	163-152109-XX	UHC
1.50-2.20:1 zoom (UHC/2K/.98DLP)	163-166104-XX	UHC
1.75-2.40:1 zoom (UHC/2K/.98DLP)	163-153100-XX	UHC
1.05:1 fixed (HB/2K/.98DLP)	108-319104-XX	HB
1.20-1.75:1 zoom (HB/2K/.98DLP)	108-350109-XX	HB
1.39-1.90:1 zoom (HB/2K/.98DLP)	108-327103-XX	HB
1.50-2.20:1 zoom (HB/2K/.98DLP)	108-329105-XX	HB
1.75-2.40:1 zoom (HB/2K/.98DLP)	108-321107-XX	HB
1.90-3.00:1 zoom (HB/2K/.98DLP)	108-328104-XX	HB
2.40-3.90:1 zoom (HB/2K/.98DLP)	108-322108-XX	HB

Lens (2K)	Lens (4K)	Lens part number	Lens type
1.00:1 fixed (HB/2K/1.2DLP)	0.90:1 fixed (HB/4K/1.39DLP)	38-809071-XX	HB
1.25-1.83:1 zoom (HB/2K/1.2DLP)	1.13-1.66:1 zoom (HB/4K/1.39DLP)	108-342100-XX	HB
1.45-2.05:1 zoom (HB/2K/1.2DLP)	1.31-1.85:1 zoom (HB/4K/1.39DLP)	108-335102-XX	HB
1.60-2.40:1 zoom (HB/2K/1.2DLP)	1.45-2.17:1 zoom (HB/4K/1.39DLP)	108-336103-XX	HB
1.80-3.00:1 zoom (HB/2K/1.2DLP)	1.63-2.71:1 zoom (HB/4K/1.39DLP)	108-337104-XX	HB
2.15-3.60:1 zoom (HB/2K/1.2DLP)	1.95-3.26:1 zoom (HB/4K/1.39DLP)	108-338105-XX	HB
3.00-4.30:1 zoom (HB/2K/1.2DLP)	2.71-3.89:1 zoom (HB/4K/1.39DLP)	108-278101-XX	HB
4.30-6.00:1 zoom (HB/2K/1.2DLP)	3.89-5.43:1 zoom (HB/4K/1.39DLP)	108-279101-XX	HB
5.50-8.50:1 zoom (HB/2K/1.2DLP)	4.98-7.69:1 zoom (HB/4K/1.39DLP)	108-280101-XX	HB

Lens (4K)	Lens part number	Lens type
1.13-1.66:1 zoom (UHC/4K/1.39DLP)	163-103105-XX	UHC
1.31-1.85:1 zoom (UHC/4K/1.39DLP)	163-104106-XX	UHC
1.45-2.17:1 zoom (UHC/4K/1.39DLP)	163-105107-XX	UHC
1.63-2.71:1 zoom (UHC/4K/1.39DLP)	163-106108-XX	UHC
1.95-3.26:1 zoom (UHC/4K/1.39DLP)	163-107109-XX	UHC
2.71-3.89:1 zoom (UHC/4K/1.39DLP)	163-108100-XX	UHC
3.89-5.43:1 zoom (UHC/4K/1.39DLP)	163-109101-XX	UHC
4.98-7.69:1 zoom (UHC/4K/1.39DLP)	163-110103-XX	UHC
0.90:1 fixed (UHC/4K/1.39DLP)	163-117100-XX	UHC
1.13-1.72:1 zoom (UHC-P/4K/1.39DLP)	163-145101-XX	UHC-P
1.35-1.84:1 zoom (UHC-P/4K/1.39DLP)	163-146102-XX	UHC-P
1.45-2.10:1 zoom (UHC-P/4K/1.39DLP)	163-147103-XX	UHC-P
1.65-2.70:1 zoom (UHC-P/4K/1.39DLP)	163-148104-XX	UHC-P

Lens (2K)	Lens (4K)	Lens part number	Lens type
1.25-1.90:1 zoom (HB-P/2K/1.2DLP)	1.13-1.72:1 zoom (HB-P/4K/1.39DLP)	163-141107-XX	HB-P
1.49-2.04:1 zoom (HB-P/2K/1.2DLP)	1.35-1.84:1 zoom (HB-P/4K/1.39DLP)	163-142108-XX	HB-P
1.60-2.32:1 zoom (HB-P/2K/1.2DLP)	1.45-2.10:1 zoom (HB-P/4K/1.39DLP)	163-143109-XX	HB-P
1.82-2.99:1 zoom (HB-P/2K/1.2DLP)	1.65-2.70:1 zoom (HB-P/4K/1.39DLP)	163-144100-XX	HB-P
1.25-1.83:1 zoom (HC/2K/1.2DLP)	1.13-1.66:1 zoom (HC/4K/1.39DLP)	152-117100-XX	HC
1.45-2.05:1 zoom (HC/2K/1.2DLP)	1.31-1.85:1 zoom (HC/4K/1.39DLP)	152-118101-XX	HC
1.60-2.40:1 zoom (HC/2K/1.2DLP)	1.45-2.17:1 zoom (HC/4K/1.39DLP)	152-119102-XX	HC
1.80-3.00:1 zoom (HC/2K/1.2DLP)	1.63-2.71:1 zoom (HC/4K/1.39DLP)	152-120104-XX	HC
2.15-3.60:1 zoom (HC/2K/1.2DLP)	1.95-3.26:1 zoom (HC/4K/1.39DLP)	108-404109-XX	HC
1.25-1.90:1 zoom (HC-P/2K/1.2DLP)	1.13-1.72:1 zoom (HC-P/4K/1.39DLP)	152-155102-XX	HC-P
1.49-2.04:1 zoom (HC-P/2K/1.2DLP)	1.35-1.84:1 zoom (HC-P/4K/1.39DLP)	152-156103-XX	HC-P
1.60-2.32:1 zoom (HC-P/2K/1.2DLP)	1.45-2.10:1 zoom (HC-P/4K/1.39DLP)	152-157104-XX	HC-P
1.82-2.99:1 zoom (HC-P/2K/1.2DLP)	1.65-2.70:1 zoom (HC-P/4K/1.39DLP)	152-158105-XX	HC-P

Have any questions? We're here to help you find the right lens for your projector.

Let's talk!

Contact us today »

Corporate offices

Christie Digital Systems USA, Inc.
Cypress
PH: +1 714-236-8610

Christie Digital Systems Canada
Inc.
Kitchener
PH: +1 519-744-8005

Worldwide offices

Australia
PH: +61 (0) 7 3624 4888

Brazil
PH: +55 11 3181-2952

China (Beijing)
PH: +86 10 6561 0240

China (Shanghai)
PH: +86 21 6030 0500

China (Shenzhen)
PH: + 86 755 3680 7000

Colombia
PH: +57 (315) 652-9620

Germany
PH: +49 221 99 512-0

India
PH: +91 (080) 6708 9999

Mexico
PH: +52 (55) 4744-1791

Singapore
PH: +65 6877 8737

South Korea
PH: +82 2 702 1601

Spain
PH: +34 (0) 91 633 99 90

United Arab Emirates
PH: +971 (0) 4 503 6800

United Kingdom
PH: +44 (0) 118 977 8000

United States (Arizona)
PH: +1 602-943-5700

United States (Texas)
PH: +1 469-757-4420

For the most current specification information, please visit christiedigital.com

Copyright 2023 Christie Digital Systems USA, Inc. All rights reserved. Our centers of excellence for manufacturing in Kitchener, Ontario, Canada and in Shenzhen, China are ISO 9001:2015 Quality Management System-certified. All brand names and product names are trademarks, registered trademarks or tradenames of their respective holders. "Christie" is a trademark of Christie Digital Systems USA, Inc., registered in the United States of America and certain other countries. DLP® and the DLP logo are registered trademarks of Texas Instruments. Performance specifications are typical. Due to constant research, specifications are subject to change without notice.
CD3990-Cinema-lens-guide-Feb-24-EN

