



**MORE LIGHT**

Featured optic products

# Projection Lenses

# Transforming Light into Fun



## Entertainment

### Creating Stunning Moments for your Customers

From digital customer desktops to the largest stage and movie theater projectors in the world, Jenoptik develops 2D and 3D projection objective lenses for a wide range of systems.

Transforming light into fun. When talking about entertainment our eyes want to experience unexpected visual sensations. An ideal picture can only be produced by an outstanding projector; an outstanding projector can only perform through an excellent objective lens used to project the enlarged, perfect image our senses crave.

To create such moments for your customers you need custom technology solutions built by a partner who speaks your language. Jenoptik has the experience and dependable expertise that is needed for a customized, reliable and on-time build. We would be pleased to provide you with projection optics offering the highest quality images in the market.

### USP

- Works with many projectors
- Able to achieve high contrast levels for deeper blacks
- Decreased number of channels used to cover a dome or simulator screen
- Reduces costs and improves return on investment
- Folded design possible
- In-house testing with Jenoptik Dome Theater

### Fields of Application

- Entertainment: Soaring and dark rides
- Simulation and training
- Giant screen cinema
- 3D movie theaters
- Planetarium

### Contact

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# F-Theta High Power Projection Lenses

## Planetarium and Giant Screen Solutions

From digital customer desktops to the largest stage and movie theater projectors in the world – Jenoptik develops 2D and 3D projection objective lenses for a wide range of systems. They can be used for innovative wide-angle and high-aperture projection units for soaring rides, 3D movie theaters, dark rides and simulators.

Jenoptik has designed, manufactured and delivered more than 1000 projection lenses for 3 to 20 meter domes. Whether you are looking for a single or multi-projector solution, Jenoptik has 2K and 4K capable lenses ready for your application – from stock or tailored to your ideas.

Advantages of laser projection:

- Lower cost of total ownership
- Lower power consumption
- Expanded color gamut
- Brighter picture
- Longer life-time

By working closely with the leading laser projector manufacturers, Jenoptik ensures to meet all application specifications. With high lumen projector becoming more prevalent in the market, selecting the right projection optics is more important than ever before.

## All our Projection Lenses are suitable for following projectors

### Christie

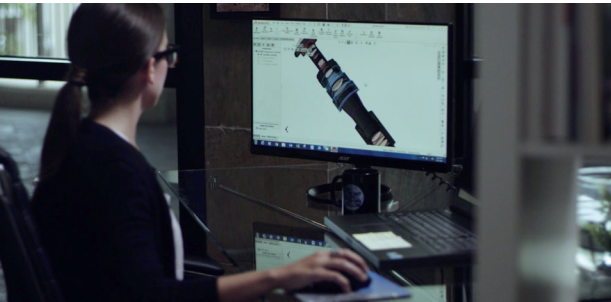
- Roadie 4K45
- Boxer Series
- D4K2560
- D4K3560
- D4KLH
- Mirage Series

### Barco

- XDL-4K75
- XDL-4K60
- XDL-4K30
- DP4K-60L
- DP4K-32B

### Digital Projection

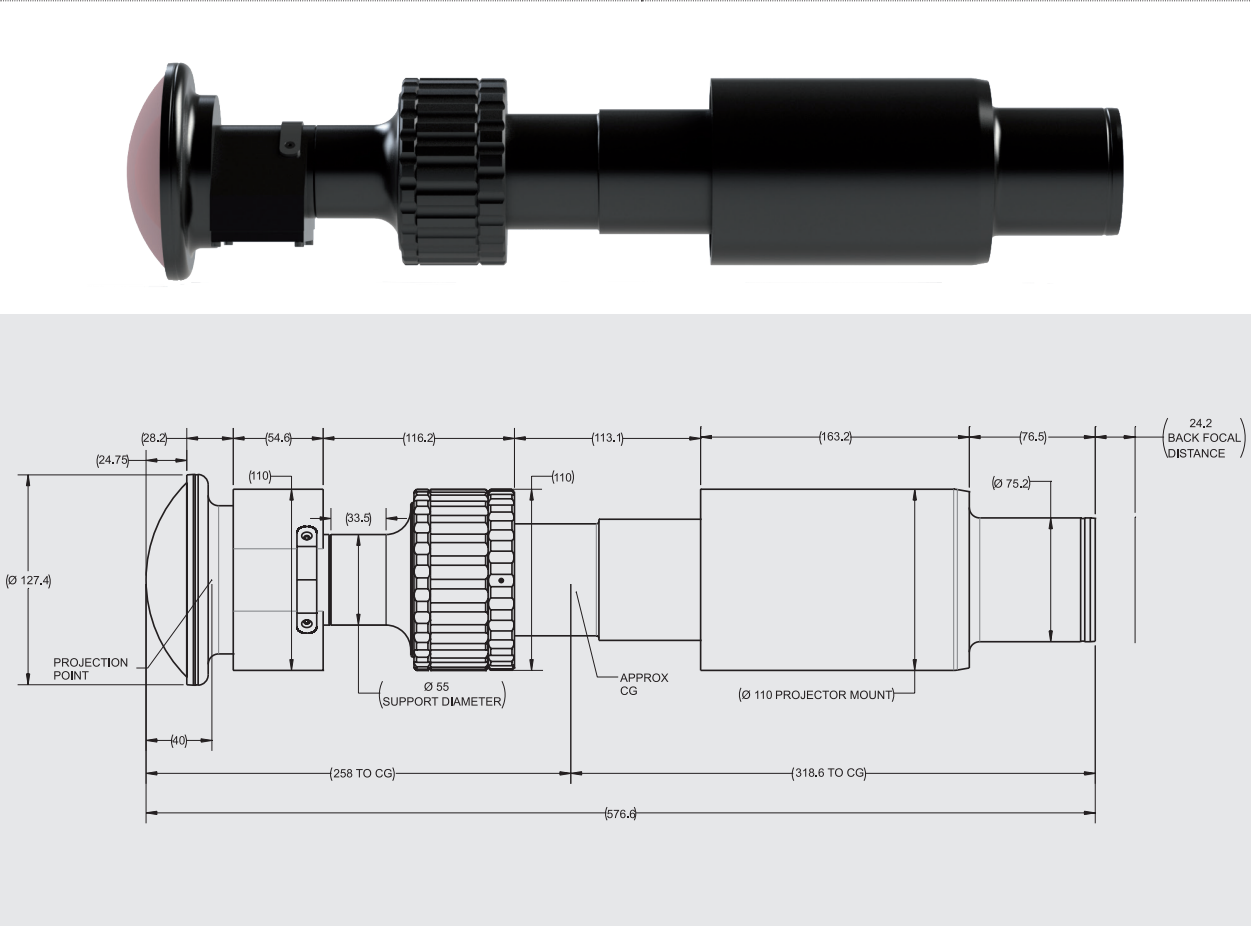
- Insight Laser 8K
- Insight Dual Laser 4K



# F-Theta High Power Projection Lenses

## Planetarium and Giant Screen Solutions | JOS4K-1

Parameters	
Horizontal field of view:	180°
Vertical field of view:	125°
Diagonal field of view:	–
Effective focal length:	7.5 mm
f#:	2.85
MTF @ 66 lp/mm:	0.68
Lateral color B-R:	< 3.5 µm
F-Theta distortion:	< 0.2 %
Transmission:	> 77 %
Digital light procession (DLP):	1.38" 3 Chip
Resolution:	4096 x 2160 pixel
DLP dimension:	30.96 mm x 16.33 mm
Pixel pitch:	7.56 µm
Max. lumens:	32 k
Order Number:	JOS4K-1

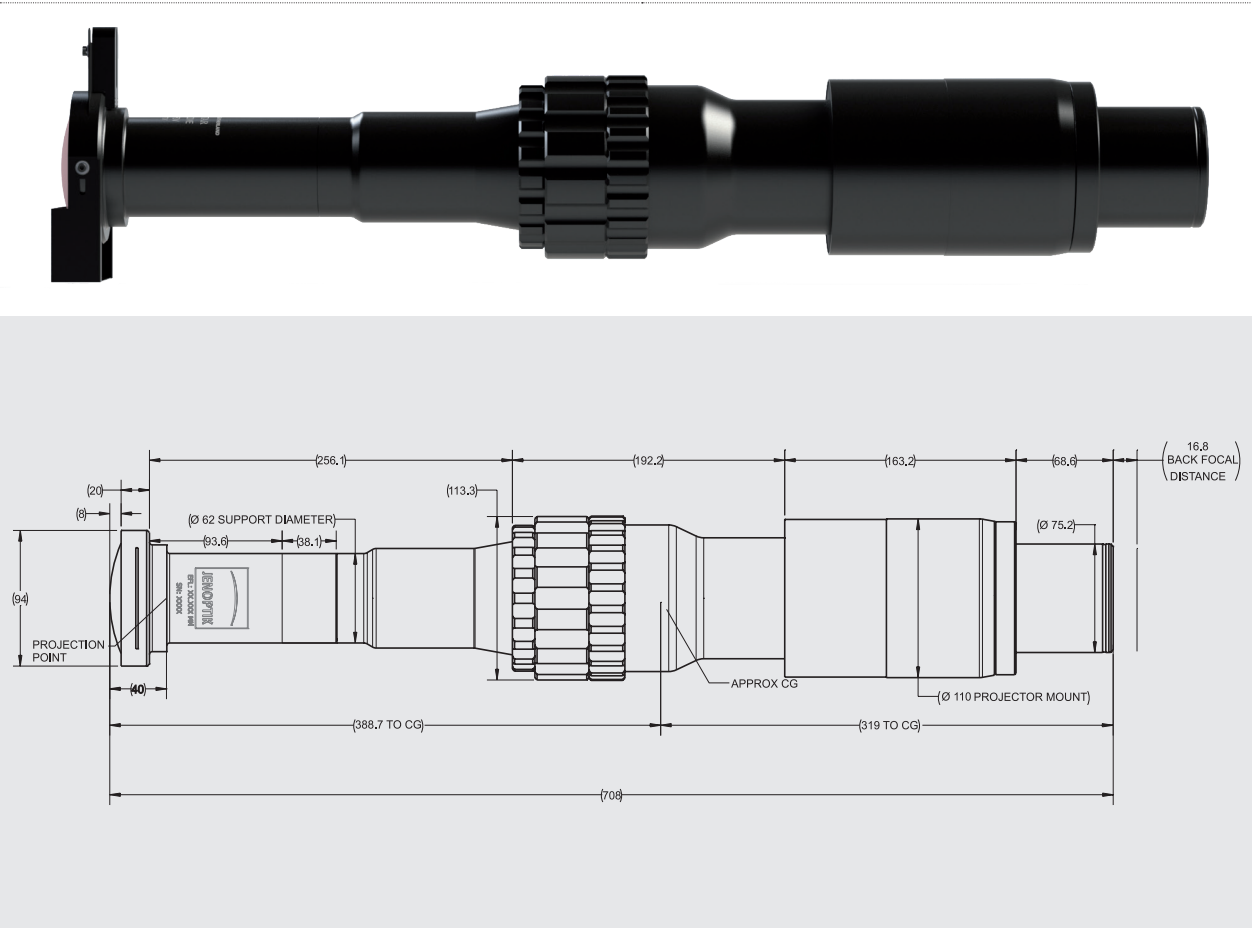


It is our policy to constantly improve the design and specifications. Accordingly, the details represented herein cannot be regarded as final and binding.

# F-Theta High Power Projection Lenses

## Planetarium and Giant Screen Solutions | JOS4K-2

Parameters	
Horizontal field of view:	101°
Vertical field of view:	53°
Diagonal field of view:	114°
Effective focal length:	17.5 mm
f#:	2.85
MTF @ 66 lp/mm:	0.78
Lateral color B-R:	< 1 μm
F-Theta distortion:	< 0.8 %
Transmission:	> 77 %
Digital light procession (DLP):	1.38" 3 Chip
Resolution:	4096 x 2160 pixel
DLP dimension:	30.96 mm x 16.33 mm
Pixel pitch:	7.56 μm
Max. lumens:	45 k
Order Number:	JOS4K-2

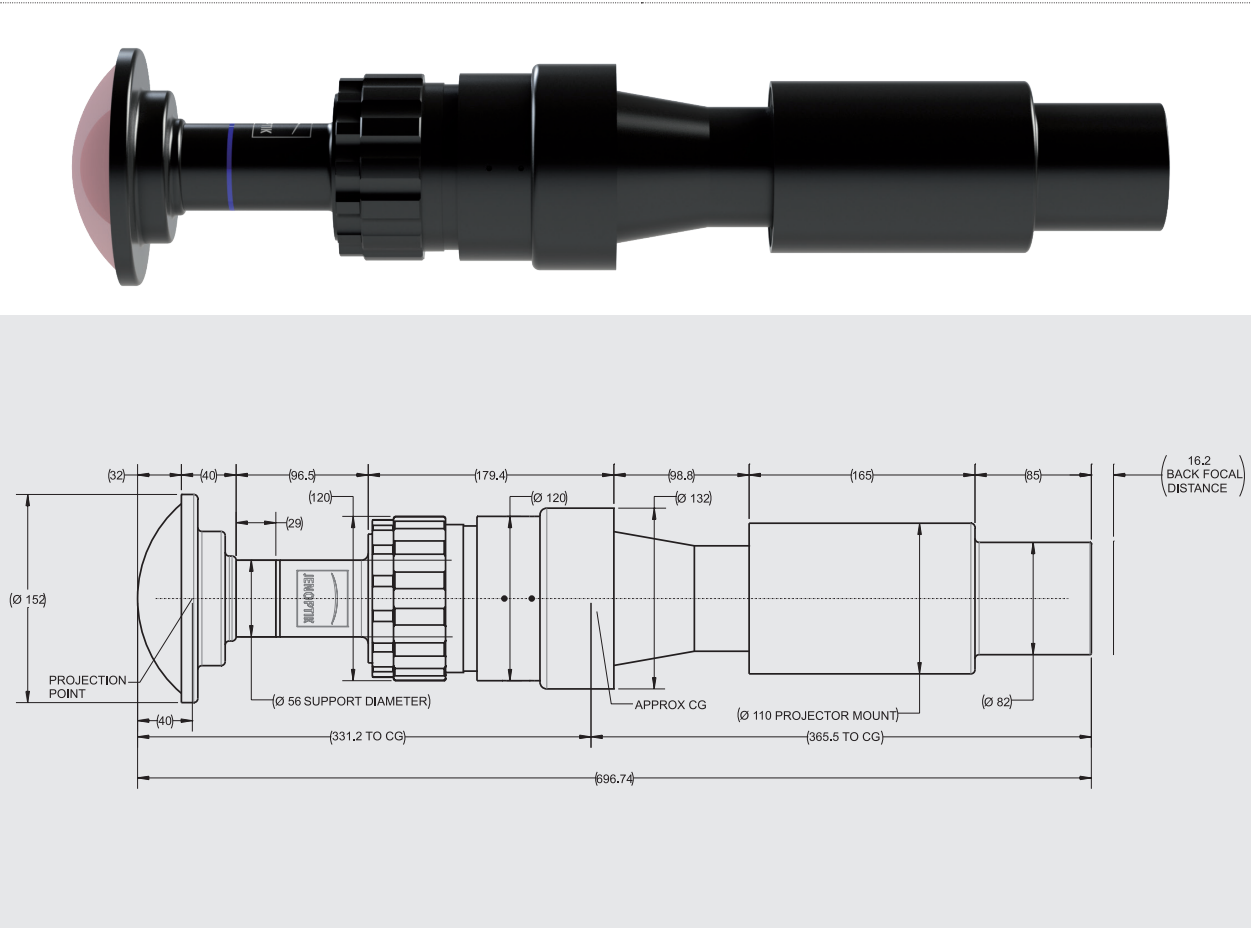


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# F-Theta High Power Projection Lenses

## Planetarium and Giant Screen Solutions | JOS4K-4

Parameters	
Horizontal field of view:	170°
Vertical field of view:	90°
Diagonal field of view:	192°
Effective focal length:	10.35 mm
f#:	2.85
MTF @ 66 lp/mm:	0.55
Lateral color B-R:	< 3.5 μm
F-Theta distortion:	< 1 %
Transmission:	> 85 %
Digital light procession (DLP):	1.38" 3 Chip
Resolution:	4096 x 2160 pixel
DLP dimension:	30.96 mm x 16.33 mm
Pixel pitch:	7.56 μm
Max. lumens:	60 k
Order Number:	JOS4K-4



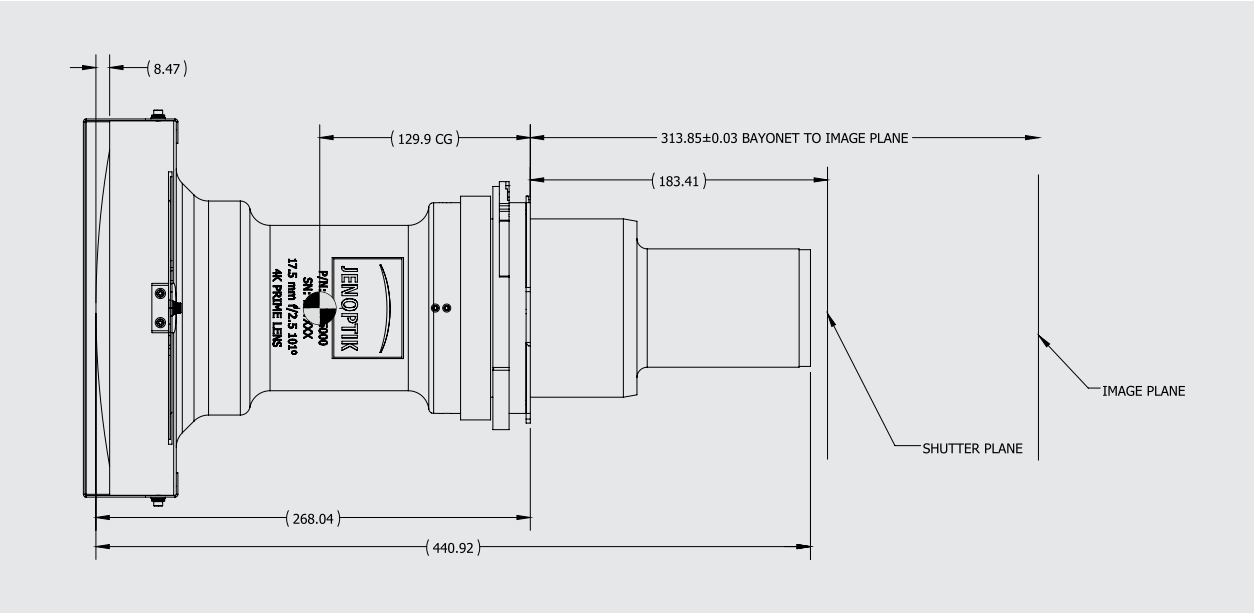
It is our policy to constantly improve the design and specifications. Accordingly, the details represented herein cannot be regarded as final and binding.

# F-Theta High Power Projection Lenses

## Planetarium and Giant Screen Solutions | JOS4K-5

NEW

Parameters	
Horizontal field of view:	101°
Vertical field of view:	53°
Diagonal field of view:	114°
Effective focal length:	17.54 mm
f#:	2.5
MTF @ 66 lp/mm:	0.8
Lateral color B-R:	< 5.0 μm
F-Theta distortion:	< 0.6 %
Transmission:	80 %
Digital light procession (DLP):	1.38" 3 Chip
Resolution:	4096 x 2160 pixel
DLP dimension:	30.96 mm x 16.33 mm
Pixel pitch:	7.56 μm
Max. lumens:	45 k
Order Number:	JOS4K-5



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# 0.6x Lens Attachment

## Wide Angle Conversion Lens

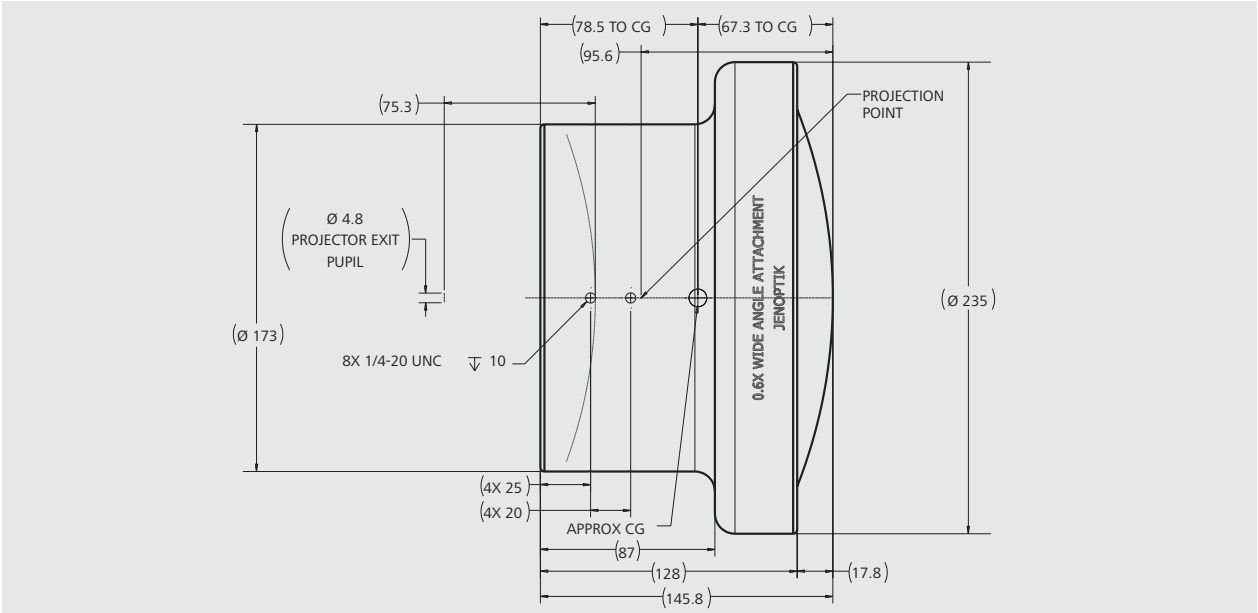
Jenoptik's portfolio of projection lenses is complemented by the 0.6x lens attachment. The wide angle conversion lens, which is optionally offered, works in conjunction with the projector prime lens.

It allows to increase the image size while maintaining a static projection distance. Reverse, it also facilitates to decrease projection throw distance while maintaining the image size.

Suitable for following projector:  
SONY VPL-GTZ 270/280 w/Lens VPLL-Z7008  
(EFL 13.46 mm - 18 mm)

Please consult us for information on further projectors.

Parameters	
Effective focal length:	- 2201 mm
MTF @ 66 lp/mm:	Depends on zoom position of prime lens
Transmission:	> 92 %
Magnification:	0.6x
Order Number:	JOSI4K-5CL



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# Adapters for F-Theta High Power Projection Lenses

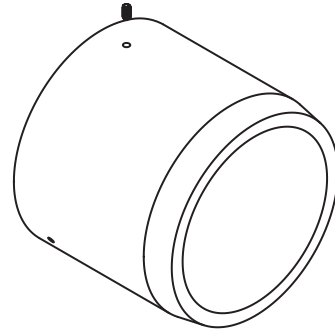
## Making Your Projects More Flexible!

Each projection manufacturer has a specific mounting configuration. This could lead to limitations when it comes to a practical equipment of your project. To compensate for this disadvantage Jenoptik extended its portfolio for

the entertainment industry with projection lens adapters. With a simple installation, the new adapters allow use of all of our projection lenses on various 3-chip DLP projectors.

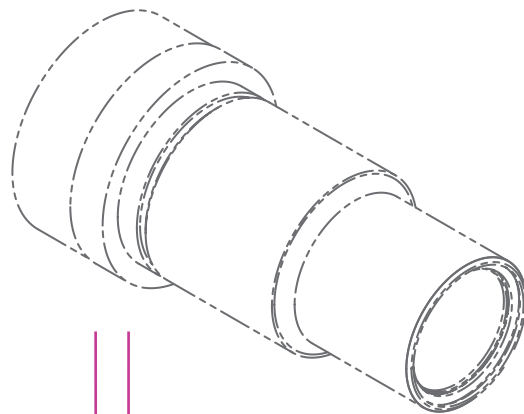
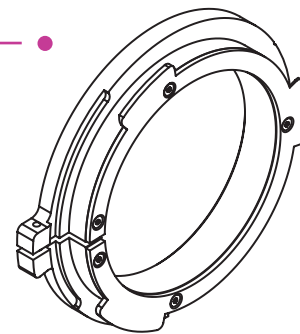
### Christie/Roadie Adapter

P/N: 500-210



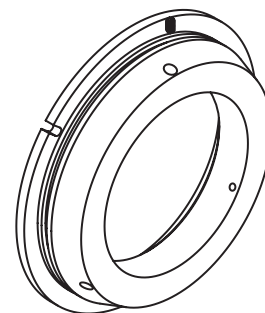
### Christie Boxer Adapter

P/N: 500-163



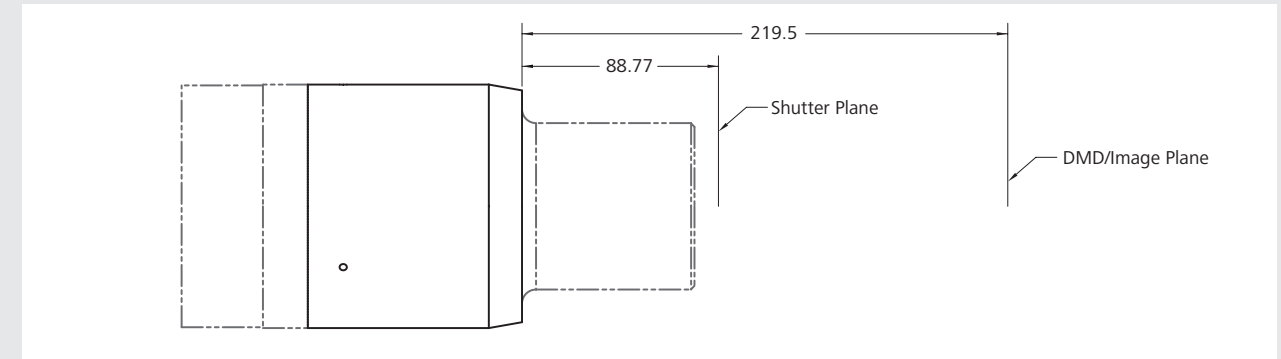
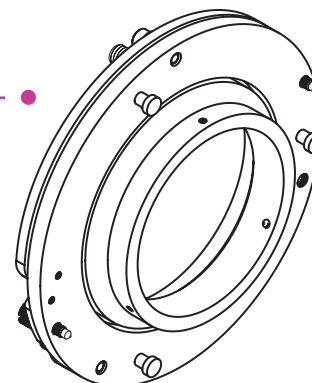
### Barco Adapter

P/N: 500-211

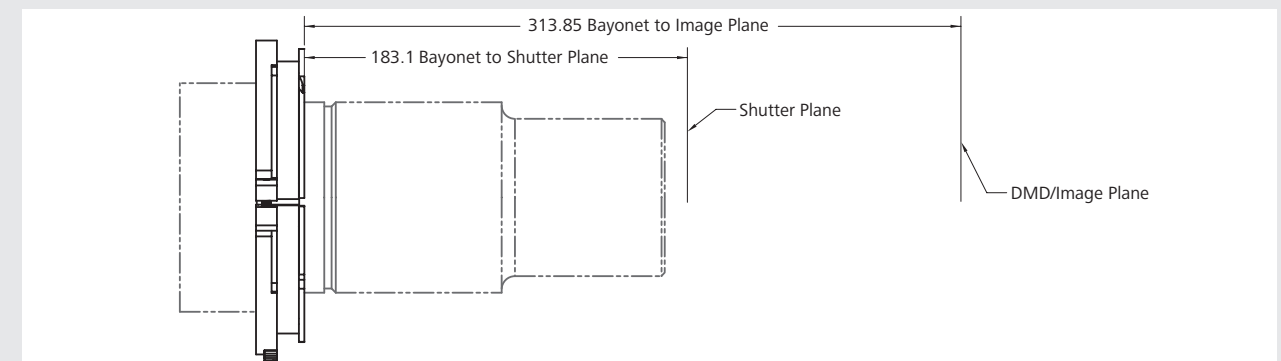


### Digital Projection Adapter

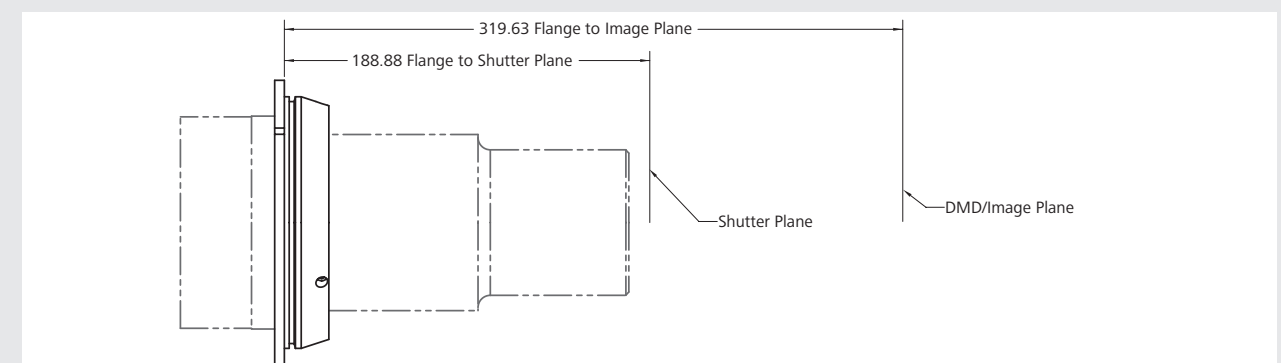
P/N: 500-225



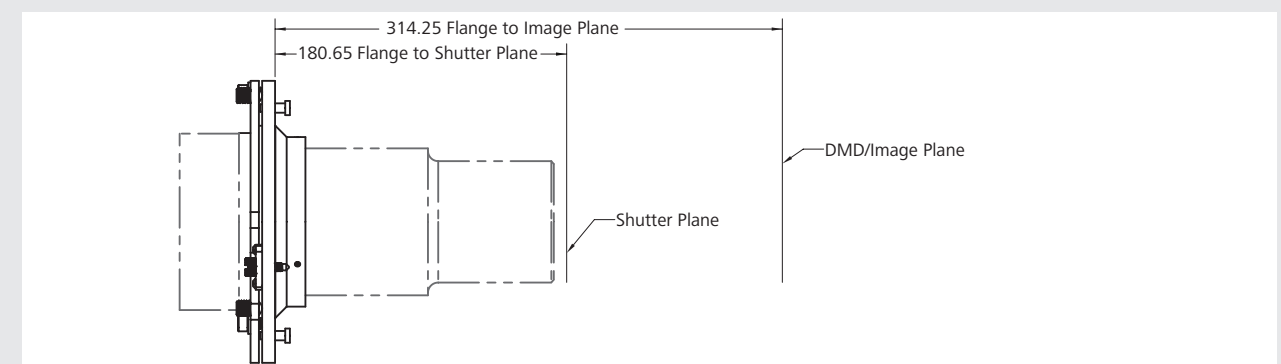
500-210 Christie/Roadie Adapter



500-163 Christie Boxer Adapter



500-211 Barco Adapter



500-225 Digital Projection Adapter



## References

### for F-Theta High Power Projection Lenses



# TEA Thea Awards 2019

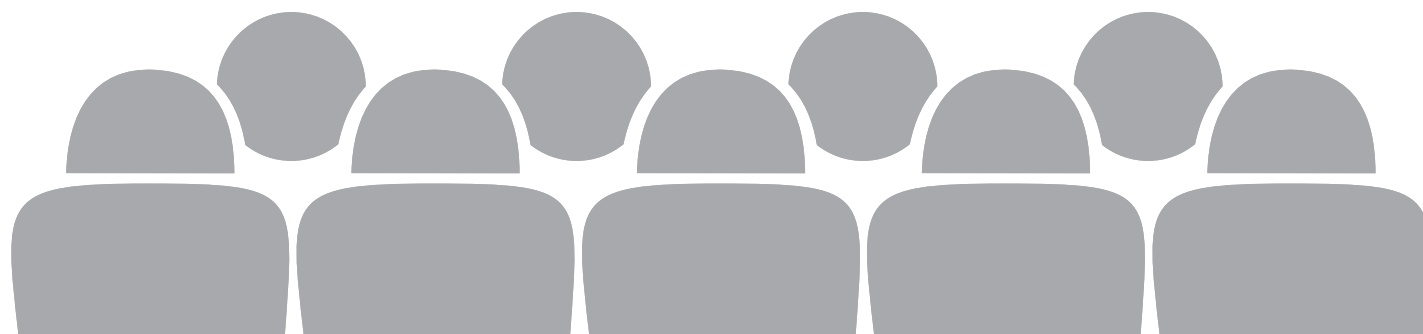
**Nemo & Friends SeaRider** at Tokyo DisneySea, an immersive 3D ride on which Jenoptik served as key contributors, received a prestigious award for outstanding achievement at the 25th Annual TEA Thea Awards.

The immersive experience is based on the Disney/Pixar films Finding Nemo and Finding Dory. Thea describes the attraction as “beautifully executed and subtly transformed.” They go on to say that “Even without 3D glasses or a

complex theatre, the team found the perfect balance of elements to make this a charming and exciting ride for the whole family.”

With their reliable expertise and in-house testing capabilities with the Jenoptik Dome Theatre, Jenoptik is the go-to partner to provide customers with the highest quality projection optics for wide-angle projection units for soaring rides, 3D movie theatres, dark rides and simulators.

Over the last two decades, Jenoptik has contributed to a number of themed entertainment rides which went on to receive awards.



# Jenoptik Dome Theater

## In-house testing and demonstration of Jenoptik projection lenses

The Jenoptik Dome Theater enables testing and demonstrating new laser projection lenses for digital cinemas, planetariums and theme park attractions in-house at a Jenoptik facility.

The screen is 24 feet in diameter with a 12 foot dome radius. The hemispherical screen is elevated five feet above the audience which is perfect for testing digital planetarium lenses. The screen is coated with a proprietary high performance surface treatment to match our customer's preferred 3D projection screens.

The Jenoptik Dome Theater also has a 30 x 16 feet flat screen for testing digital cinema lenses especially produced for flat screens.



# JENOPTIK | Light & Optics

## Optical Technologies for Specialized Applications

Your partner for optical and micro optical systems, opto-electronic subsystems, modules as well as components – made of optical glass, infrared materials and polymers.

The Light & Optics division of Jenoptik is one of the few research, development and production partners worldwide for optical, micro optical and opto-electronic systems and subsystems as well as precision components designed to meet your highest quality standards.

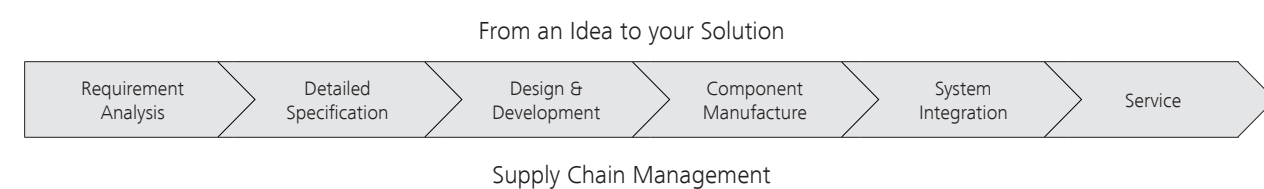
From the initial concept development to the optimized supply chain: We support you throughout the entire project and respond to your requirements with utmost flexibility, thereby, contributing to your economic success.

### The structure of the Jenoptik Group | Division Light & Optics



## Semiconductor & Advanced Manufacturing

A holistic solution provider



Clear process steps for repeatable and sustainable performance in technology, quality and logistics.

## Our Markets

- Semiconductor equipment
- Laser material processing
- Digital world & entertainment
- Healthcare
- Safety & security
- Optical information & communication technologies

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