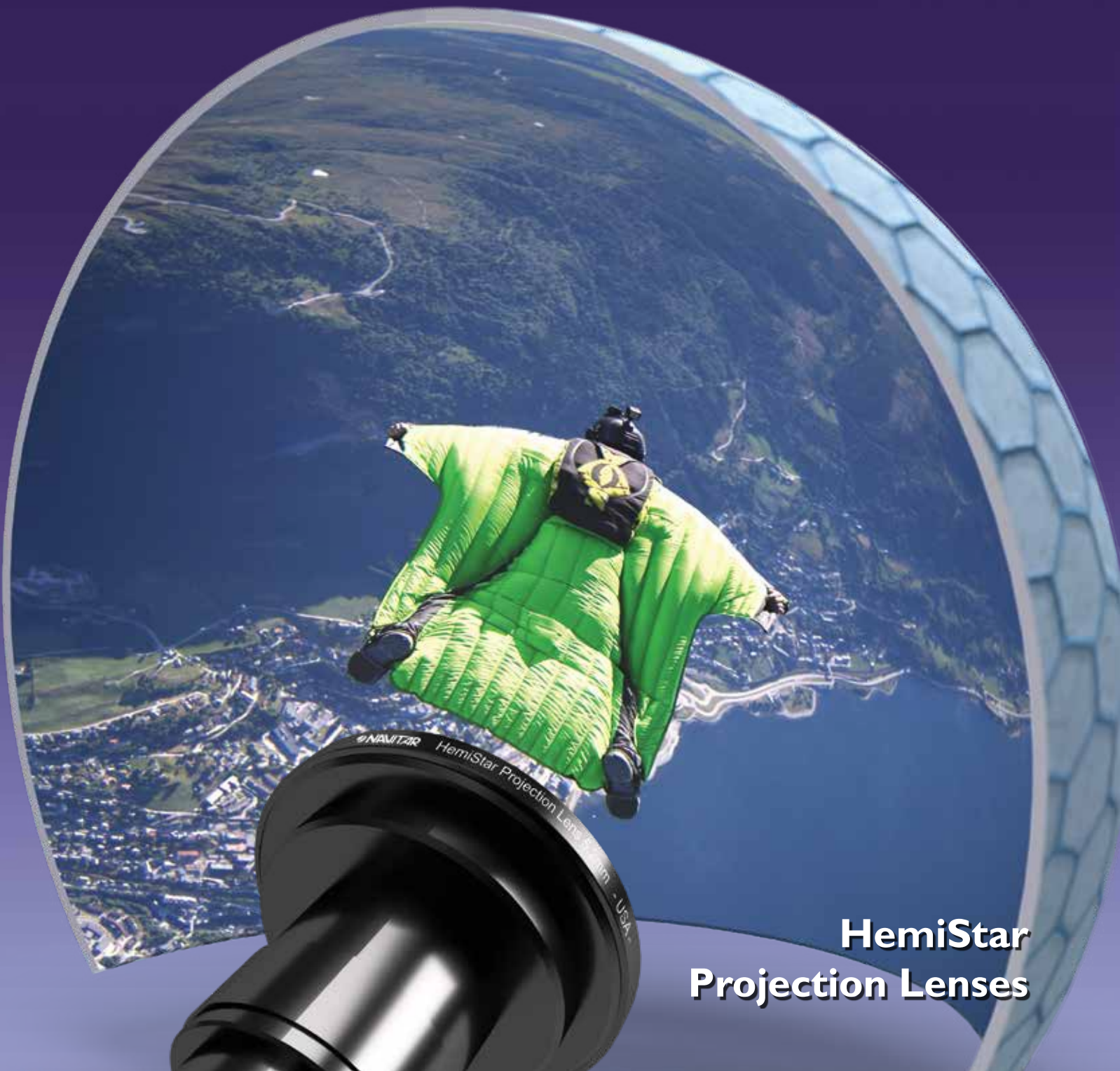




**Extraordinary Solutions
for Stunning Installations**



**HemiStar
Projection Lenses**



High Performance Projection Lenses

Navitar offers a large selection of projection optics that will create an immersive experience in a variety of settings. Our lenses range from wide-angle fisheye lenses for 8K projectors to compact conversion lenses for tabletop projectors. Navitar lenses will fill your planetarium or home theater with beautiful, high resolution imagery. You will find Navitar projection lenses in theme park attractions, state-of-the-art simulators, museums, cinemas and more.

Partner with Navitar

Our goal is to deliver superior quality lens solutions that consistently perform and meet very specific functionality for our customers. When an application requires features that an off-the-shelf solution cannot provide, our team of engineers excel at designing and prototyping optics that will outperform expectations.

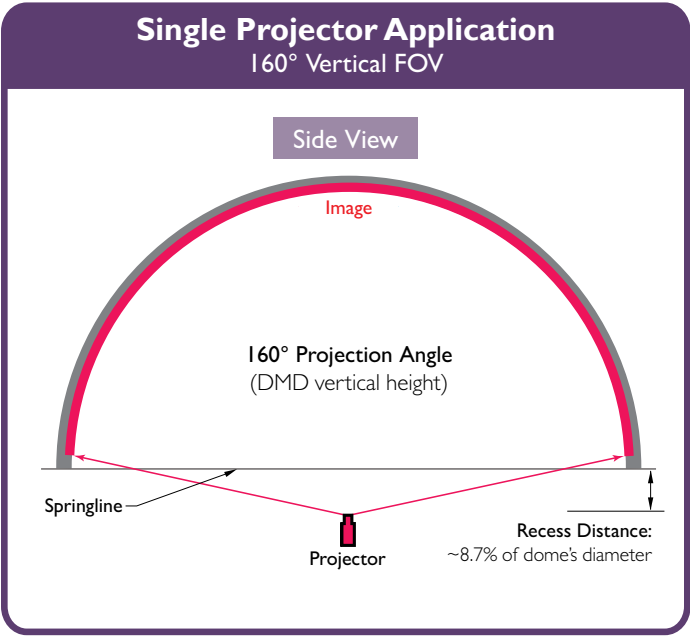
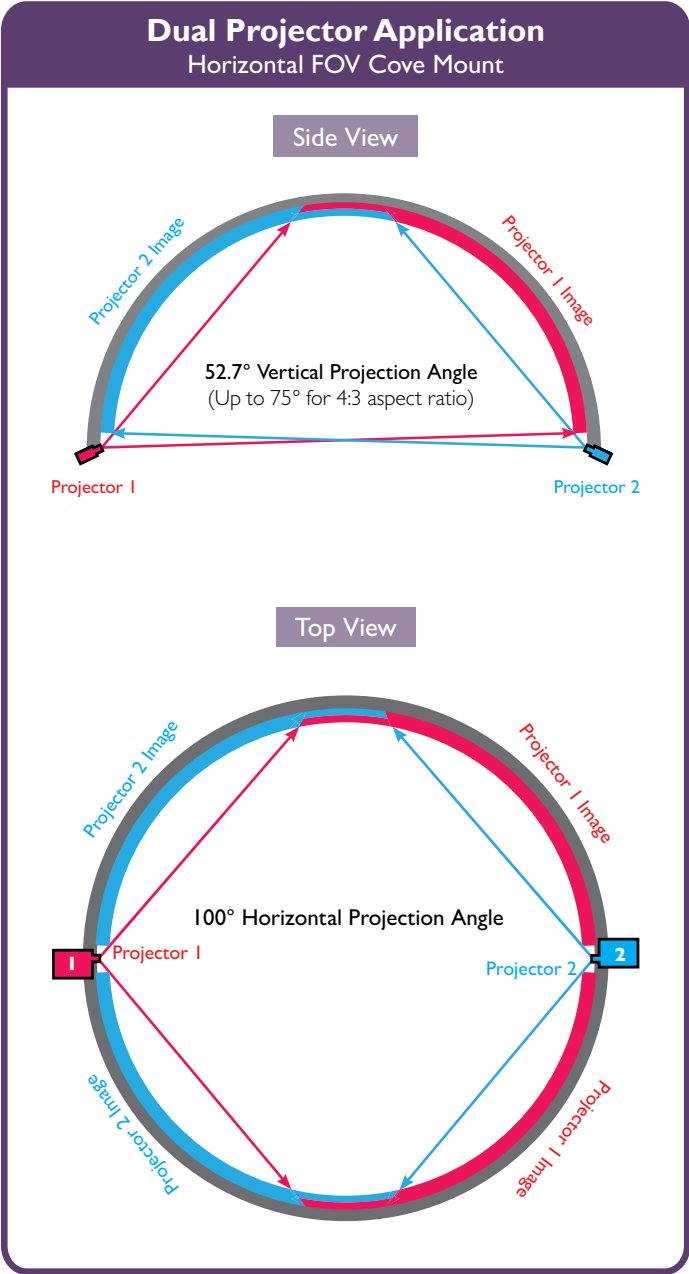
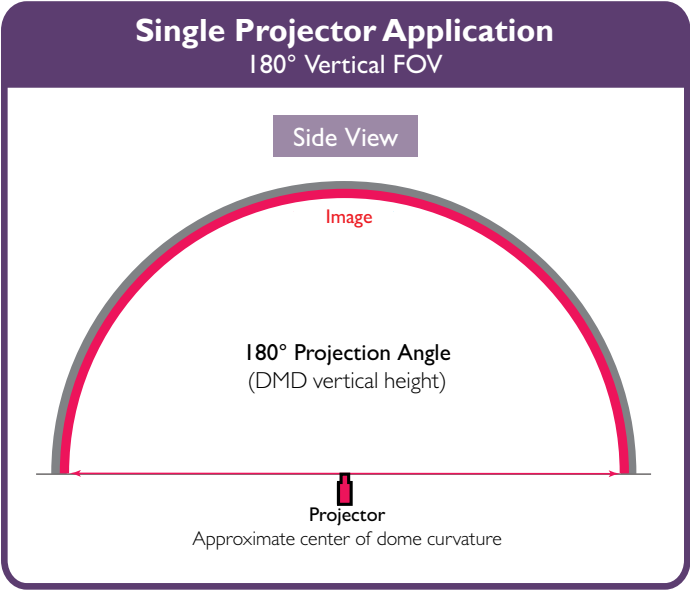
We stand behind our workmanship! All of our projection lenses are hand assembled to very exacting standards in our Rochester, New York production facility. The Navitar brand is known for superior quality optics.



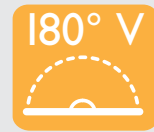
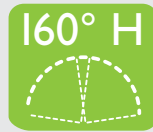
Lens & Projector Application Diagrams

Navitar projection lenses deliver superior image quality in a wide range of applications. Our fisheye lenses have a very large depth of focus, allowing them to produce sharp images in many settings.

We've created several diagrams that represent common dome projection configurations. For many of these applications we offer off-the-shelf lens solutions that integrate seamlessly with the main projector brands.



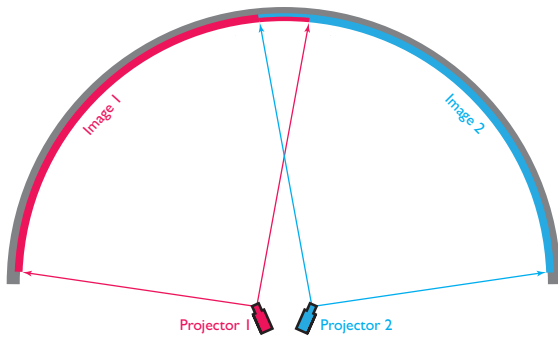
Projection View Angles



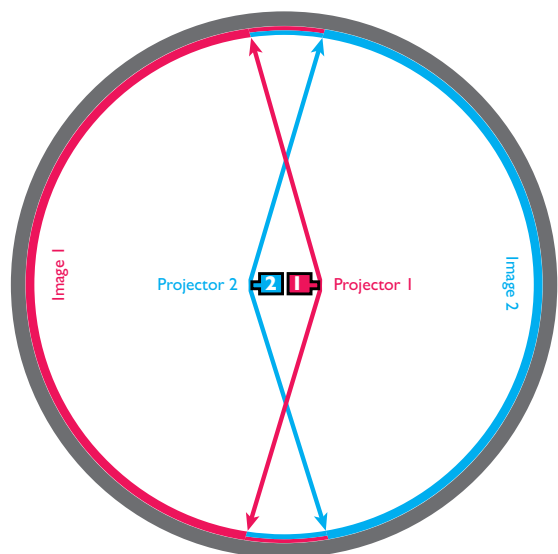
Look for these icons to quickly determine the projection view angle for each lens.

Dual Projector Pit Mount Application

Side View



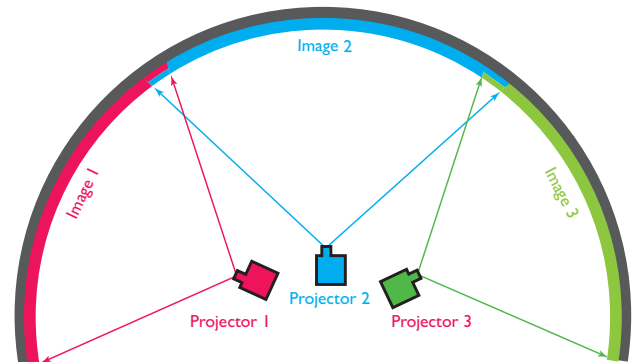
Top View



Three Projector Application

Immersive 100° Horizontal FOV

Top View



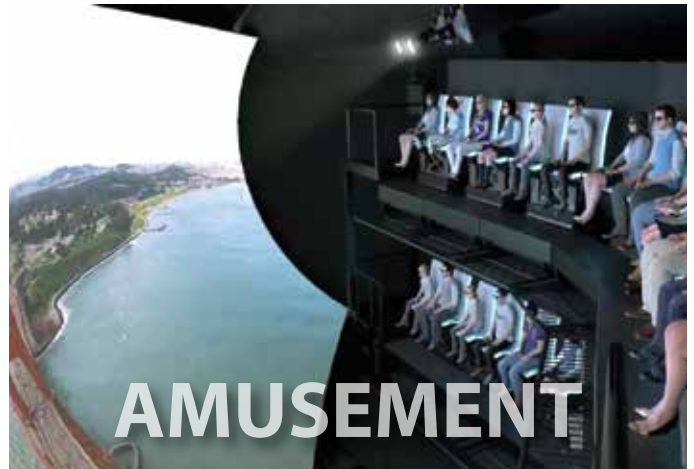
Lens Designs That Offer High Brightness & Contrast

At Navitar we have gained invaluable experience from decades of internal product development and partnerships with key organizations in the projection industry. We excel at producing high contrast and high lumen (fluence) projection lenses.

Navitar has developed lenses that work with traditional Xenon based light engines up to 40K ANSI lumens as well 6P platforms up to 60K ANSI lumens. We have over 500 lenses installed on 1.38" DLP platforms for digital cinema applications which see 35K ANSI lumens on a daily basis.

Our designs are engineered for peak power and continual thermal cycles through on/off routines. Navitar lenses currently achieve contrast ratios in excess of 400:1.

We produce a wide range of lenses that offer superior performance with high lamp output and require no downtime for installation. You will find our lenses in many applications where performance and consistency are critical. Speak with one of our team members to discuss a custom or off-the-shelf solution.



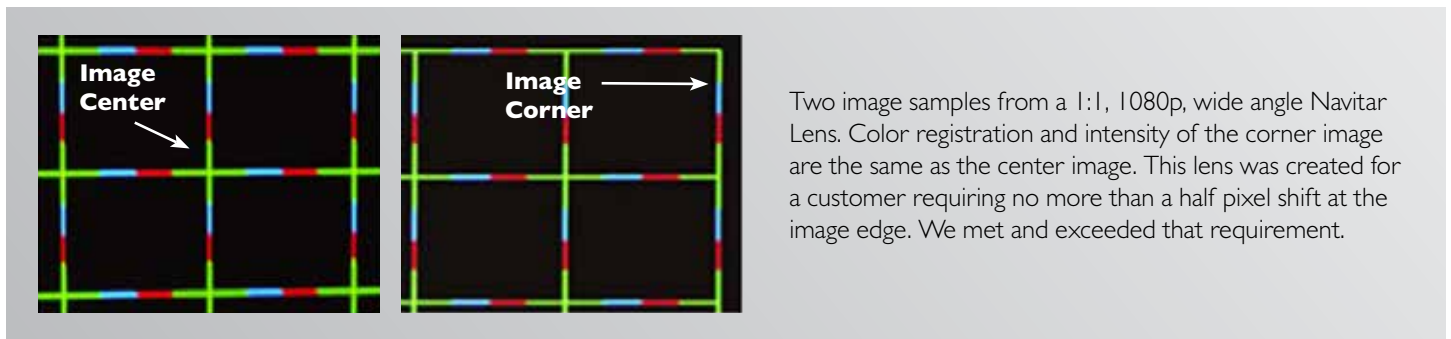
Custom Projection Lens Design

Perfect Image Quality by Design

The engineers at Navitar know how to create 2K, 4K and 8K projection lenses optimized for specific projection equipment. The secret to designing a near-diffraction limited lens is close interaction between the designer and projector manufacturer to overcome subtle projector nuances. The RGB panels of a projector's light source are often tuned to the original OEM lens. Obtaining those calibrations will enable a replacement lens to match the light source with the same precision.

Consistent Color Registration

Producing a clear image without variation requires tight registration between the red, green and blue wavelengths. For high end applications, lateral color shift can have devastating effects on image quality and consistency. If the red channel of a flight simulator's image is slightly offset, color shifts will occur making it difficult for the pilot to properly identify objects in their view. Color shifts tend to increase as you reach the corners of an image. Fortunately our apochromatic lenses maintain that registration across the entire image, providing superior image quality and consistent color.



Minimal Distortion

Most simulators require more than one projector to achieve a seamless panoramic view. The low distortion of our projection lenses makes it possible to align each image, avoiding detectable transitions from one image to another.

Delivering the Correct Resolution

Navitar engineers identify customer requirements for resolution at the image center and at the corners. Resulting lens designs maintain the image resolution generated by the projector and can be confirmed by the resulting Modular Transfer Function (MTF) of the lens.

ENVIRONMENTS

MUSEUMS

ARIUMS



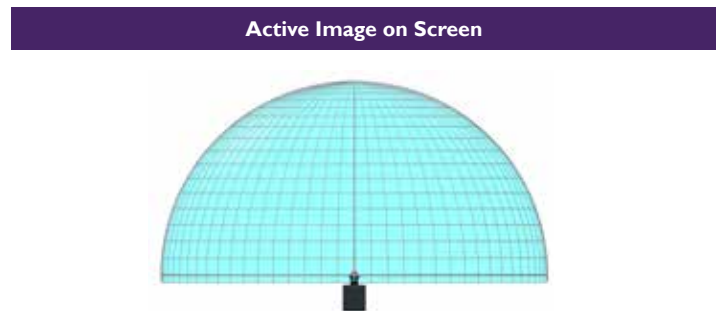
HemiStar HS30 Lens



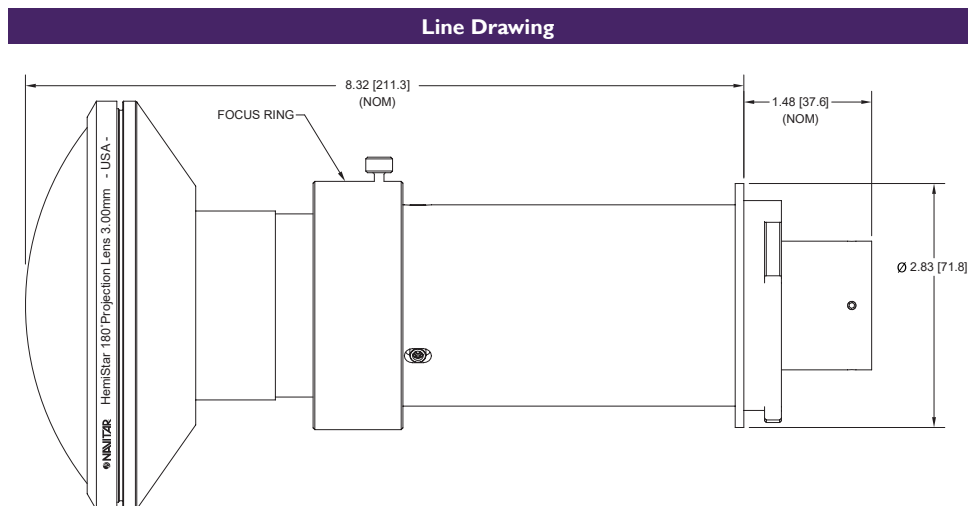
Projection Angle Chart for Dome Lens																
Projection Panels		Resolution			Panel Size (mm)			Projected Pixels				Projection Angles		Shift		
		Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	@ 180°	Mpixels	Horizontal	Vertical	Horizontal	Vertical	V Angle
Original Alternate Panels	0.67" WUXGA	1920	1200	7.56 µm	14.515	9.072	17.117	1200	1200	1176	1.13	184.7°	184.7°	0%	0%	0.0°
	0.76" 3LCD WUXGA	1920	1200	8.5 µm	16.320	10.200	19.245	1067	1067	1046	0.89	184.7°	184.7°	0%	0%	0.0°
	0.74" 3LCD 1080p	1920	1080	8.5 µm	16.320	9.180	18.725	1067	1067	1046	0.89	184.7°	184.7°	0%	0%	0.0°
	0.69" XGA	1024	768	13.68 µm	14.008	10.506	17.510	663	663	650	0.35	184.7°	184.7°	0%	0%	0.0°
	0.66" HD1080	1920	1080	7.56 µm	14.515	8.165	16.654	1200	1080	1176	0.92	184.7°	163.3°	0%	6%	10.7°
	0.65" WXGA	1280	800	10.8 µm	13.824	8.640	16.302	840	800	823	0.50	184.7°	174.3°	0%	2%	5.2°
	0.64" WQXGA	2560	1600	5.4 µm	13.824	8.640	16.302	1680	1600	1646	2.01	184.7°	174.3°	0%	2%	5.2°
	0.55" XGA	1024	768	10.8 µm	11.059	8.294	13.824	840	768	823	0.46	184.7°	166.3°	0%	5%	9.2°

HS30 Model Numbers	
Model	Projector Brand
I-28501	Vivitek
I-28487	NEC
I-19985	Optoma
I-27901	Optoma, Christie & Barco
I-22450	Digital Projection, Panasonic, Vivitek, NEC/Sharp
I-28190	Barco
I-29019	Christie & Optoma

Note: Part numbers vary depending on projector manufacturer and model.
Call for a Quote.



Lens Specifications	
Focal Length:	3.00mm
Image Circle:	9.072mm
Max Half-Angle:	92°
F/#:	F/2.5
Focus Range:	600mm - ∞
Transmittance:	81% - 89%
MTF Center:	66% @ 66 lp/mm
MTF Edge:	60% @ 66 lp/mm
Lateral Color R-G:	< 4µm
Lateral Color B-G:	< 2µm
F-Theta Distortion:	-6.0% Max
Relative Illumination:	>95%
Max Lumens:	12
Back Focus:	Suitable for small format single-chip DLP & 3LCD





HemiStar HS44 Lens



Projection Angle Chart for Dome Lens

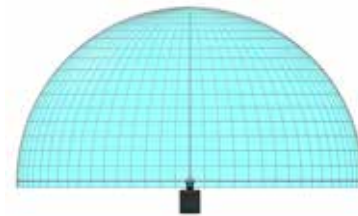
Projection Panels		Resolution			Panel Size (mm)			Projected Pixels			Projection Angles		Shift		
		Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	Mpixels	Horizontal	Vertical	Horizontal	Vertical	V Angle
Original	1.06" 3LCD WUXGA	1920	1200	12 µm	23.040	14.400	27.170	1167	1167	1.36	194.2°	194.2°	0%	0%	0.5°
	0.94" SXGA+	1400	1050	13.68 µm	19.152	14.364	23.940	1023	1023	1.05	194.2°	194.2°	0%	0%	0.5°
	0.96" WUXGA	1920	1200	10.8 µm	20.736	12.960	24.453	1296	1200	1.56	194.2°	178.5°	0%	4%	8.4°
	0.94" HD1080	1920	1080	10.8 µm	20.736	11.664	23.791	1296	1080	1.40	194.2°	159.2°	0%	10%	10.8°
	0.90" WQXGA	2560	1600	7.56 µm	19.354	12.096	22.823	1852	1600	2.96	194.2°	165.6°	0%	8%	14.8°
	0.76" 3LCD WUXGA	1920	1200	8.5 µm	16.320	10.200	19.245	1647	1200	1.98	194.2°	137.9°	0%	19%	28.7°

HS44 Model Numbers

Model	Projector Brand
I-29756	Epson

Note: Part numbers vary depending on projector manufacturer and model. Call for a Quote.

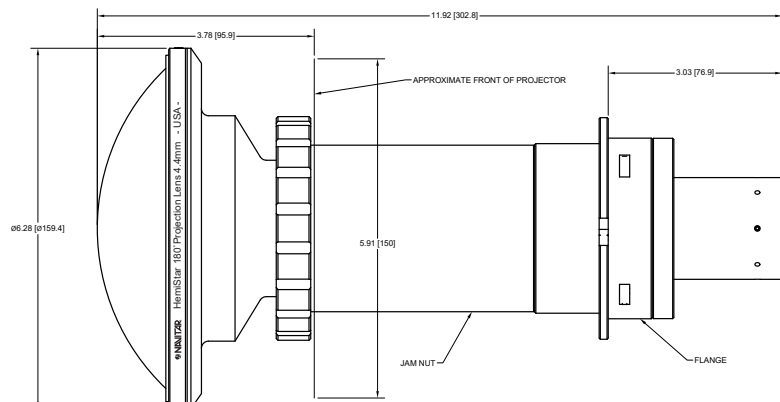
Active Image on Screen



Lens Specifications

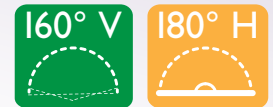
Focal Length:	4.44 mm
Image Circle:	14 mm
Max Half-Angle:	97.5°
F/#:	F/2.5
Focus Range:	1 m - ∞
Transmittance:	80%
MTF Center:	74% 42 lp/mm
MTF Edge:	25% 42 lp/mm
Lateral Color R-G:	3.9 µm
Lateral Color B-G:	2.6 µm
F-Theta Distortion:	-5% Max
Max Lumens:	15
Back Focus:	Suitable for small format single-chip DLP & 3LCD

Line Drawing





HemiStar HS45 Lens

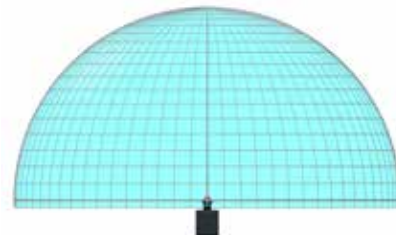


Projection Angle Chart for Dome Lens																
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels				Projection Angles		Shift			
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	@ 180°	Mpixels	Horizontal	Vertical	Horizontal	Vertical	V Angle	
0.90" WQXGA	2560	1600	7.56 μm	19.354	12.096	22.823	1831	1600	1781	2.01	185.8°	160.2°	0%	7%	12.9°	
0.96" WUXGA	1920	1200	10.8 μm	20.736	12.960	24.453	1281	1200	1247	1.13	185.8°	172.8°	0%	3%	6.6°	
0.94" HD1080	1920	1080	10.8 μm	20.736	11.664	23.791	1281	1080	1247	0.92	185.8°	154.0°	0%	9%	16.0°	
0.94" SXGA+	1400	1050	13.68 μm	19.152	14.364	23.940	1012	1012	984	0.80	185.8°	185.8°	0%	0%	0.1°	

HS45 Model Numbers	
Model	Projector Brand
I-22882	Barco, DP dVision
I-29781	Norxe PI
I-26668	Christie
I-28456	Barco, DPi Vision

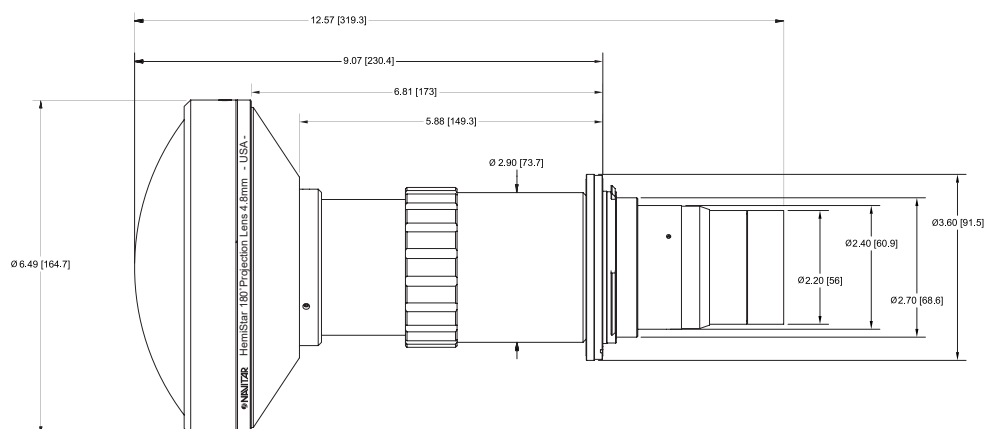
Note: Part numbers vary depending on projector manufacturer and model.
Call for a Quote.

Active Image on Screen



Lens Specifications	
Focal Length:	4.5 mm
Image Circle:	13.84 mm
Max Half-Angle:	93°
F/#:	F/2.5
Focus Range:	800 mm - ∞
Transmittance:	80%
MTF Center:	70% @ 66 lp/mm
MTF Edge:	40% @ 66 lp/mm
Lateral Color R-G:	< 3.4 µm
Lateral Color B-G:	< 3.6 µm
F-Theta Distortion:	-5% Max
Relative Illumination:	95%
Max Lumens:	15
Back Focus:	Suitable for 0.95" single-chip DLP & 3LCD

Line Drawing



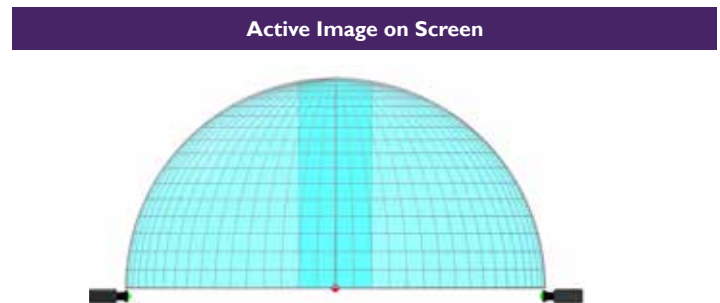


HemiStar HM4K-83 Lens

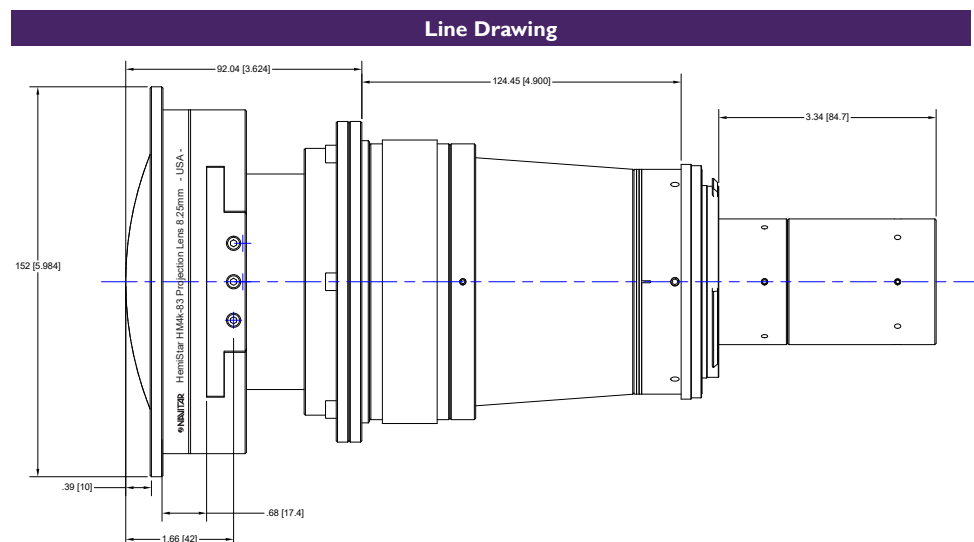


Projection Angle Chart for Dome Lens																
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels			Projection Angles				Shift		
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	Mpixels	Horizontal	Vertical	Diagonal	TR Equiv	Horizontal	Vertical	V Angle
0.67" WQXGA+	2716	1600	5.4 μm	14.666	8.640	17.022	2716	1600	4.35	105.2°	60.6°	123.2°	0.38:1	14%	59%	38.8°
0.64" WQXGA	2560	1600	5.4 μm	13.824	8.640	16.302	2560	1600	4.10	98.8°	60.6°	117.6°	0.43:1	18%	59%	38.8°
0.66" 4K UHD	3840	2160	3.8 μm	14.592	8.208	16.742	3840	2160	8.29	104.6°	57.4°	121.0°	0.39:1	15%	65%	40.3°
0.67" WUXGA	1920	1200	7.56 μm	14.515	9.072	17.117	1920	1200	2.30	104.0°	63.7°	123.9°	0.39:1	15%	54%	37.2°

HM4K-83 Model Numbers	
Model	Projector Brand
I-00256	Barco F80-4K12
Note: Part numbers vary depending on projector manufacturer and model. Call for a Quote.	



Lens Specifications	
Focal Length:	8.25 mm
Image Circle:	18.9 mm
Max Half-Angle:	69°
F/#:	F/2.5
Focus Range:	1 m - ∞
MTF Center:	81% @ 93 lp/mm
MTF Edge:	70% @ 93 lp/mm
Lateral Color R-G:	<1.1 μ m
Lateral Color B-G:	<0.7 μ m
F-Theta Distortion:	-5% Max
Back Focus:	35.58mm Air Equivalent



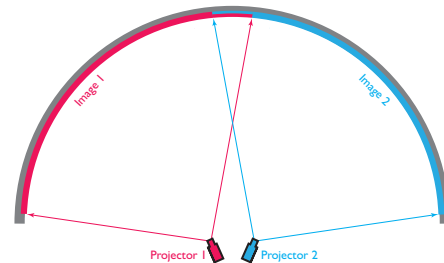


HemiStar HM4K-52 Lens



Projection Angle Chart for Dome Lens														
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels			Projection Angles		Shift		
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	Mpixels	Horizontal	Vertical	Horizontal	Vertical	V Angle
0.67" WQXGA+	2716	1600	5.4 μm	14.666	8.640	17.022	2707	1600	4.33	169.8°	97.5°	0%	35%	36.2°
0.64" WQXGA	2560	1600	5.4 μm	13.824	8.640	16.302	2560	1600	4.10	160.0°	97.5°	3%	35%	36.2°
0.66" 4K UHD	3840	2160	3.8 μm	14.592	8.208	16.742	3840	2160	8.29	169.5°	92.5°	0%	39%	38.8°
0.67" WUXGA	1920	1200	7.56 μm	14.515	9.072	17.117	1920	1200	2.30	168.5°	102.6°	0%	31%	33.7°

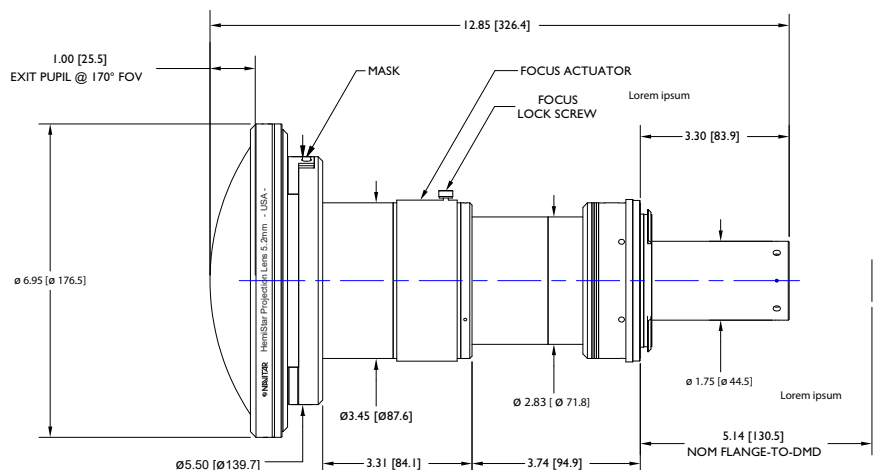
Active Image on Screen



Lens Specifications

Focal Length:	5.2 mm
Image Circle:	15.32 mm
Max Half-Angle:	90°
F/#:	F/2.7
Focus Range:	1 m - ∞
MTF Center:	89% @ 93 lp/mm
MTF Edge:	30% @ 93 lp/mm
Lateral Color R-G:	<2.7 μ m
Lateral Color B-G:	<2.7 μ m
F-Theta Distortion:	-5% Max
Back Focus:	35.58mm Air Equivalent

Line Drawing





HemiStar HMT-119 Lens

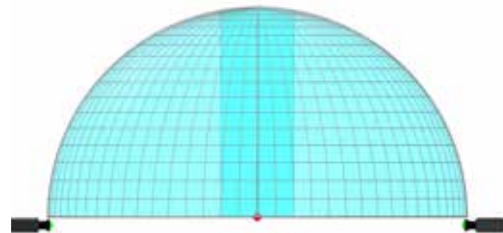


Projection Angle Chart for Dome Lens																
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels			Projection Angles				Shift		
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	Mpixels	Horizontal	Vertical	Diagonal	TR Equiv	Horizontal	Vertical	V Angle
0.96" WUXGA	1920	1200	10.80 μm	20.736	12.960	24.453	1920	1200	2.30	105.0°	63.7°	126.5°	0.38:1	13%	50%	36.2°
0.90" WQXGA	2560	1600	7.56 μm	19.354	12.096	22.823	2560	1600	4.10	97.3°	59.3°	116.9°	0.44:1	17%	57%	38.4°
0.94" SXGA+	1400	1050	13.68 μm	19.152	14.364	23.940	1400	1050	1.47	96.2°	70.8°	123.5°	0.45:1	18%	41%	32.6°
0.94" HD1080	1920	1080	10.8 μm	20.736	11.664	23.791	1920	1080	2.07	105.0°	57.1°	122.6°	0.38:1	13%	61%	39.5°

HMT-119 Model Numbers	
Model	Projector Brand
I-27978	Christie
I-27977	Panasonic
I-29340	DP TITAN
I-29610	Barco

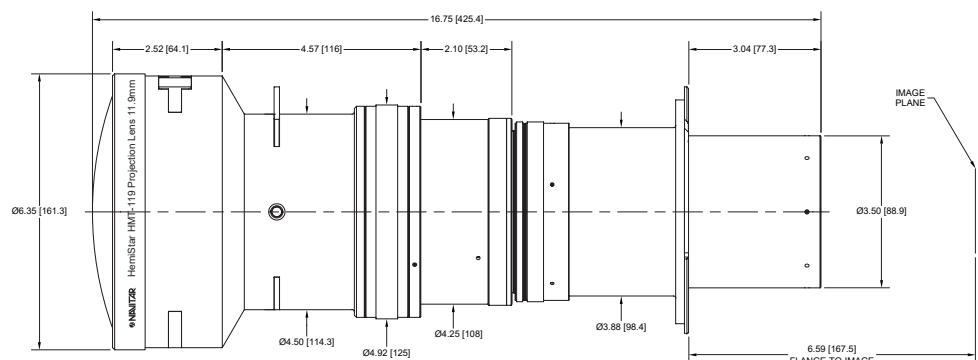
Note: Part numbers vary depending on projector manufacturer and model. Call for a Quote.

Active Image on Screen



Lens Specifications	
Focal Length:	11.88 mm
Image Circle:	26.0 mm
Max Half-Angle:	68°
F/#:	F/2.5
Focus Range:	4m - ∞
MTF Center:	90% @ 66 lp/mm
MTF Edge:	41% @ 66 lp/mm
Lateral Color R-G:	< 3.75 μ m
Lateral Color B-G:	< 3.75 μ m
F-Theta Distortion:	-8.5% Max
Transmittance:	75%
Relative Illumination:	> 97%
Back Focus:	90.528mm Air Equivalent, for 3 chip WUXGA DLP

Line Drawing





HemiStar HT-49 Lens

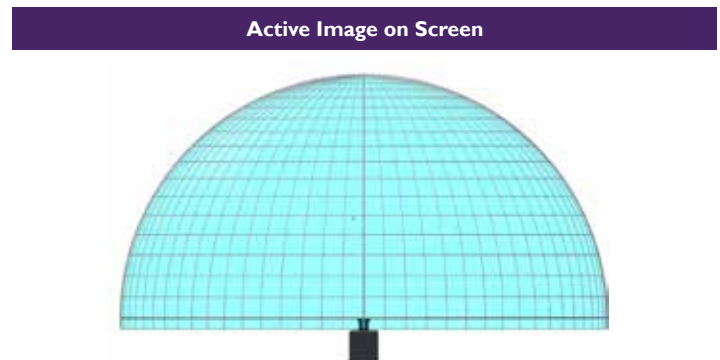


Projection Angle Chart for Dome Lens															
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels				Projection Angles		Shift		
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	@ 180°	Mpixels	Horizontal	Vertical	Horizontal	Vertical	V Angle
0.96" WUXGA	1920	1200	10.8 µm	20.736	12.960	24.453	1352	1200	1322	1.13	185.9°	160.0°	0%	6%	13.0°
0.94" SXGA+	1400	1050	13.68 µm	19.152	14.364	23.940	1068	1050	1044	0.87	185.9°	181.8°	0%	1%	2.1°

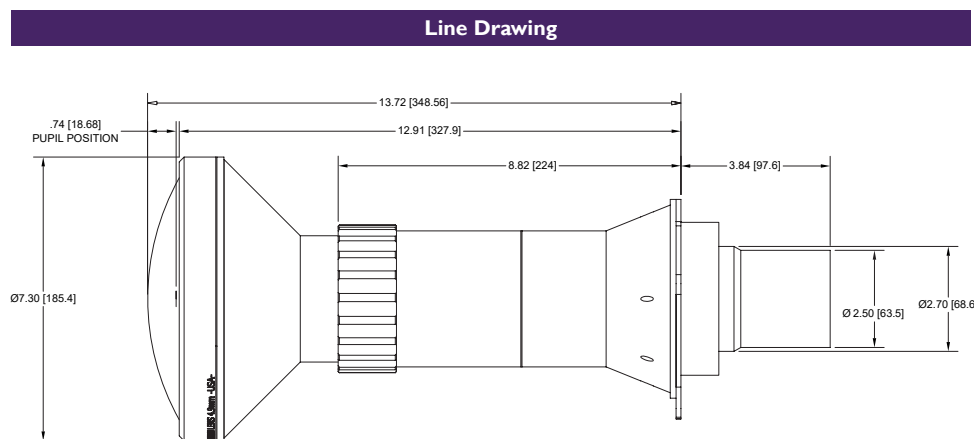
HT-49 Model Numbers	
Model	Projector Brand
I-22653	Christie
TBA	Barco UDX-W22/W32
TBA	Barco UDX-4K22/4K32
I-22653	Panasonic

Note: Compatible with most 0.94" & 0.96" 3-Chip DLP® projectors

Note: Part numbers vary depending on projector manufacturer and model. Call for a Quote.



Lens Specifications	
Focal Length:	4.87 mm
Image Circle:	14.606 mm
Max Half-Angle:	93°
F/#:	F/3
Focus Range:	1 m - ∞
MTF Center:	73% @ 46 lp/mm
MTF Edge:	40% @ 46 lp/mm
Lateral Color R-G:	< 5.5 µm
Lateral Color B-G:	< 2.5 µm
F-Theta Distortion:	-8% Max
Transmittance:	69%
Relative Illumination:	89%
Back Focus:	Suitable for 3-chip DLP





HemiStar HM4K-96 Lens



Projection Angle Chart for Dome Lens

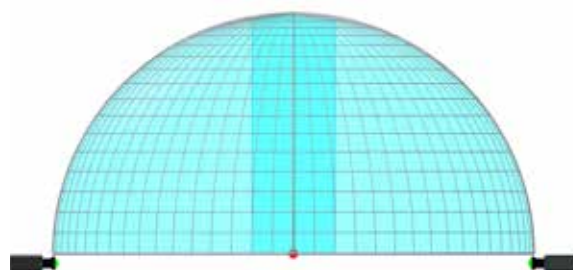
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels			Projection Angles				Shift		
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	Mpixels	Horizontal	Vertical	Diagonal	TR Equiv	Horizontal	Vertical	V Angle
Sony 0.74" 4K GTZ Series	4096	2160	4.05 μ m	16.859	8.748	18.754	4096	2160	8.85	105.1°	53.0°	120.9°	0.38:1	8%	61%	36.5°

HM4K-96 Model Numbers

Model	Projector Brand
I-100515	SONY GTZ380
I-26906	SONY GTZ270, GTZ280

Note: Part numbers vary depending on projector manufacturer and model.
Call for a Quote.

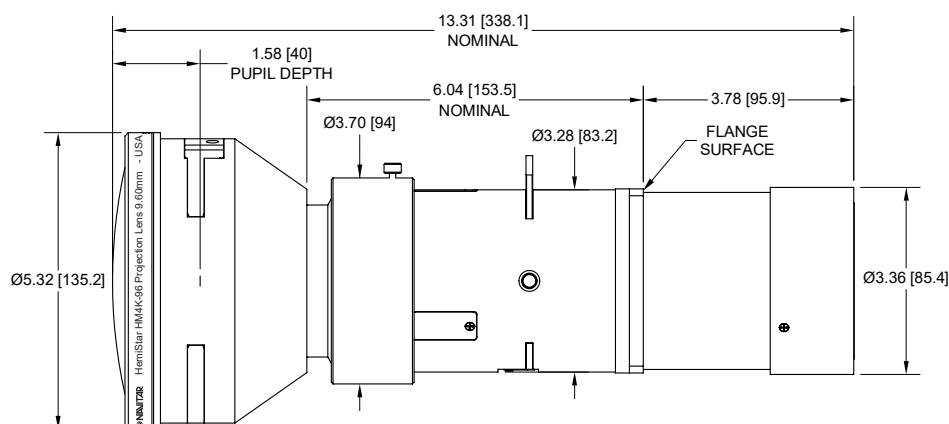
Active Image on Screen



Lens Specifications

Focal Length:	9.6 mm
Image Circle:	19.4 mm
Max Half-Angle:	62.96°
F/#:	F/2.4
Focus Range:	2 m - ∞
MTF Center:	65% @ 125 lp/mm
MTF Edge:	63% @ 125 lp/mm
Lateral Color R-G:	< 0.7 μ m
Lateral Color B-G:	< 1.0 μ m
F-Theta Distortion:	8.1% Max
Max Lumens:	10
Back Focus:	4K SXRD

Line Drawing





HemiStar HM4K-47 Lens



Projection Angle Chart for Dome Lens

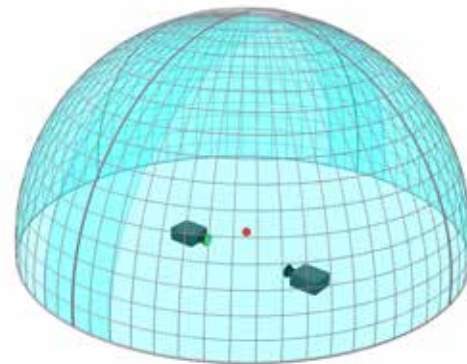
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels			Projection Angles		Shift		
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	Mpixels	Horizontal	Vertical	Horizontal	Vertical	V Angle
Sony 0.74" 4K GTZ	4096	2160	4.05 μm	16.589	8.748	18.754	3468	2160	7.49	173.9°	108.2°	0%	30%	32.9°

HM4K-47 Model Numbers

Model	Projector Brand
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Note: Part numbers vary depending on projector manufacturer and model. Call for a Quote.

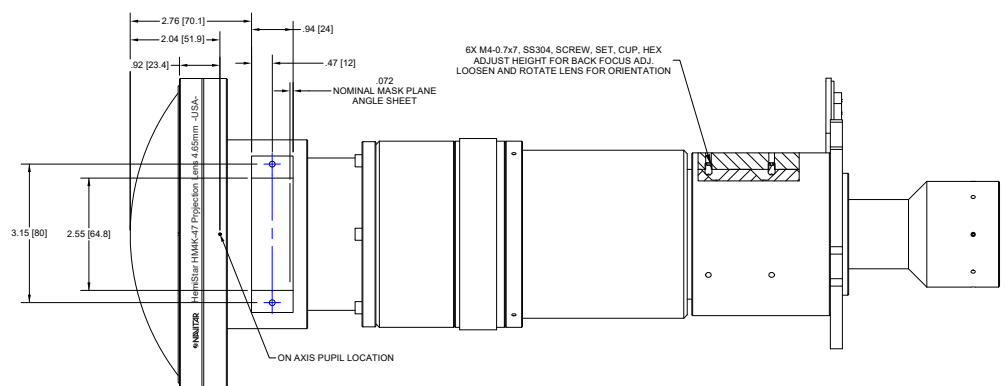
Active Image on Screen



Lens Specifications

Focal Length:	4.66 mm
Image Circle:	14.046 mm
Max Half-Angle:	87°
F/#:	F/3
Focus Range:	2 m - ∞
MTF Center:	60% @ 125 lp/mm
MTF Edge:	40% @ 125 lp/mm
Lateral Color R-G:	1.8 μm
Lateral Color B-G:	1.8 μm
F-Theta Distortion:	-1% Max

Line Drawing





HemiStar HM4K-178 Lens

High Lumen



Projection Angle Chart for Dome Lens

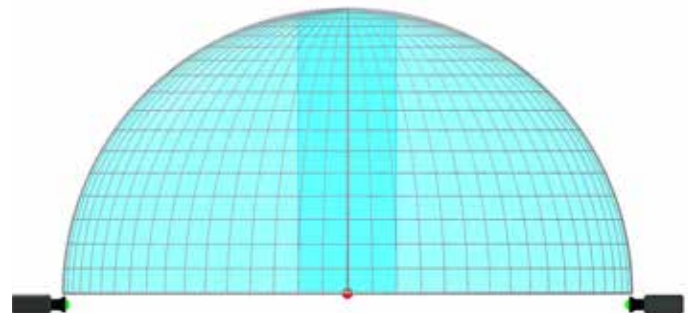
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels			Projection Angles				Shift		
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	Mpixels	Horizontal	Vertical	Diagonal	TR Equiv	Horizontal	Vertical	V Angle
1.38" 4K DLP	4096	2160	7.56 μ m	30.966	16.330	35.008	4096	2160	8.85	105.4°	53.1°	120.8°	0.38:1	13%	70%	42.5°

HM4K-178 Model Numbers

Model	Projector Brand
I-00090	Panasonic
I-29788	Barco
I-29789	Christie
I-29790	DP insight
I-29791	Christie Boxer
I-29792	NEC/Sharp

Note: Part numbers vary depending on projector manufacturer and model. Call for a Quote.

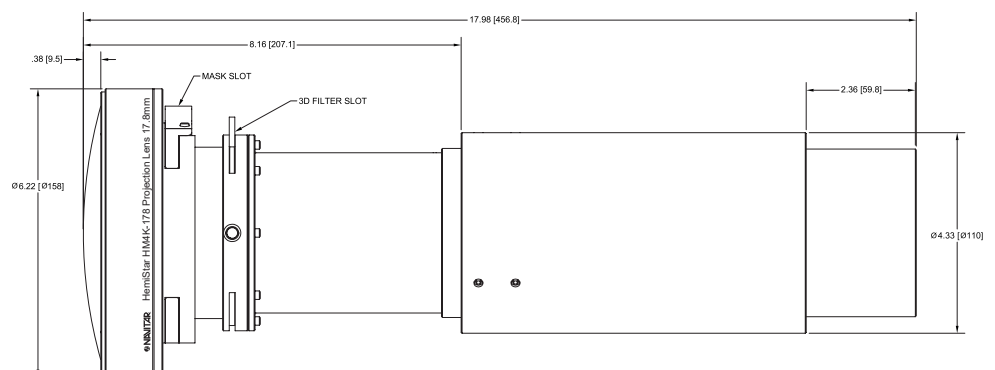
Active Image on Screen



Lens Specifications

Focal Length:	17.8 mm
Image Circle:	39.25 mm
Max Half-Angle:	69°
F/#:	F/2.6
Focus Range:	4 m - ∞
MTF Center:	80% @ 66 lp/mm
MTF Edge:	50% @ 66 lp/mm
Lateral Color R-G:	< 1.5 μ m
Lateral Color B-G:	< 3.2 μ m
F-Theta Distortion:	8% Max
Relative Illumination:	>98%
Back Focus:	TI 4K DLP

Line Drawing





HemiStar HMR-113 Lens

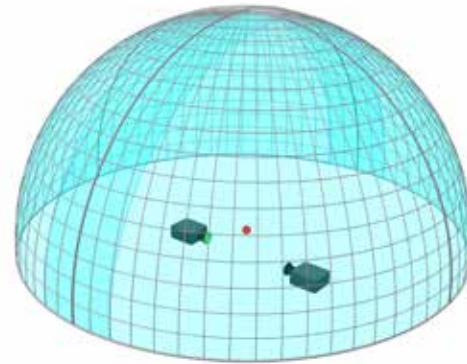
High Lumen

Projection Angle Chart for Dome Lens																	
Projection Panels	Resolution			Panel Size (mm)			Projected Pixels			Projection Angles				Shift			
	Horizontal	Vertical	Pixel Pitch	Horizontal	Vertical	Diagonal	Horizontal	Vertical	Mpixels	Horizontal	Vertical	Diagonal	TR Equiv	Horizontal	Vertical	V Angle	
1.38" 4K DLP 3-Chip	4096	2160	7.56 μm	30.966	16.330	35.008	4096	2160	8.8	170.0°	84.4°	180.0°	0.04:1	2	49%	47.3°	
1.25" 2K DLP 3-Chip	2048	1080	13.68 μm	28.017	14.774	31.674	2048	1080	2.2	151.7°	76.2°	175.2°	0.13:1	7	59%	51.4°	

HMR-113 Model Numbers	
Model	Projector Brand
I-27076	Barco
I-27077	Christie, Christie Roadie
I-27079	Christie Boxer
I-27078	DP Insight

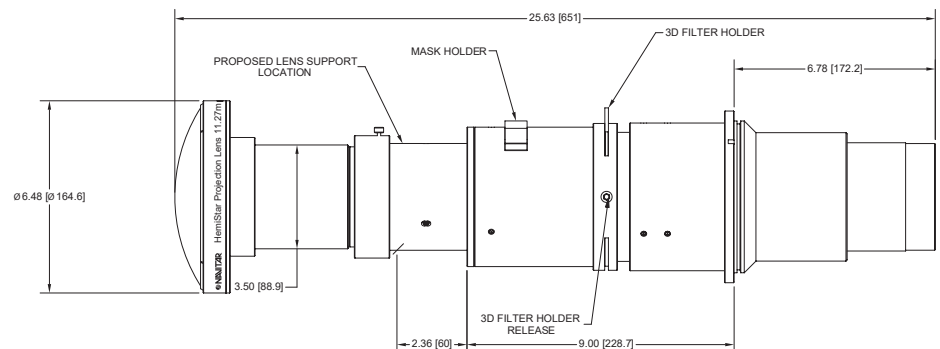
Note: Part numbers vary depending on projector manufacturer and model.
Call for a Quote.

Active Image on Screen



Lens Specifications	
Focal Length:	11.27 mm
Image Circle:	32.24 mm
Max Half-Angle:	90°
F/#:	F/2.5
Focus Range:	3 m - ∞
MTF Center:	55% @ 66lp/mm
MTF Edge:	55% @ 66lp/mm
Lateral Color R-G:	< 1/2 pixel with 7.56 μ m pixel
Lateral Color B-G:	< 1/2 pixel with 7.56 μ m pixel
F-Theta Distortion:	< -9.0% Max
Transmittance:	73%
Relative Illumination:	95%
Max Lumens:	45
Back Focus:	TI 4K DLP

Line Drawing





3.5X Fisheye Conversion Lens



Throw Ratio to Projected Angle Conversion Chart

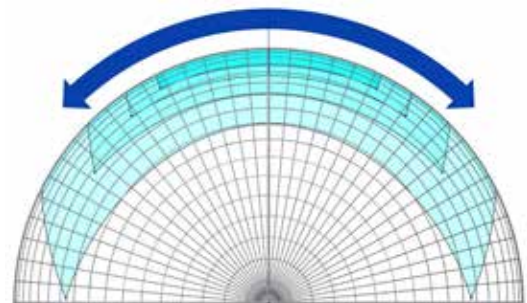
Prime Lens Throw	New H°	4:3 V°	16:10 V°	16:9 V°	2K & 4K 17:9 V°
1.30:1	199°	125°	102°	90°	84°
1.35:1	180°	120°	97°	86°	80°
1.40:1	167°	115°	93°	83°	77°
1.44:1	160°	112°	91°	81°	75°
1.50:1	149°	107°	86°	77°	72°
1.60:1	137°	99°	80°	72°	67°
1.70:1	128°	92°	75°	68°	63°
1.80:1	120°	87°	71°	64°	60°
1.90:1	113°	82°	67°	60°	57°
2.00:1	106°	77°	64°	57°	54°
2.10:1	101°	73°	61°	55°	51°
2.25:1	93°	68°	57°	51°	48°
2.50:1	83°	61°	51°	46°	43°
2.75:1	75°	56°	46°	41°	38°
3.00:1	68°	51°	42°	37°	35°
3.50:1	58°	44°	35°	31°	29°
4.00:1	51°	38°	30°	25°	24°

Projection Angle Chart for Dome Lens

Projector Examples	Panel	Aspect Ratio	Prime Lens Throw Ratio	Throw Angles	
				Short	Long
JVC	0.70" D-ILA	16:9 HD	1.38 - 2.79:1	172° x 85°	74° x 40°
Panasonic	0.67" DLP	16:10 HD	1.46 - 2.94:1	156° x 89°	70° x 42°
Canon	0.71" LCoS	16:10	1.49 - 2.24:1	151° x 87°	93° x 56°
Sony	0.74" SXRD	17:9	1.38 - 2.82:1	172° x 79°	73° x 37°
Optoma	0.66" DLP	16:9 HD	1.39 - 2.22:1	170° x 84°	94° x 51°

* This lens is designed to work with 0.70" panel projectors with prime zooms that have a focal length of 19-40mm. Lens may work with other panel sizes and other focal length prime lenses. Will require user testing. Call for additional information and quote.

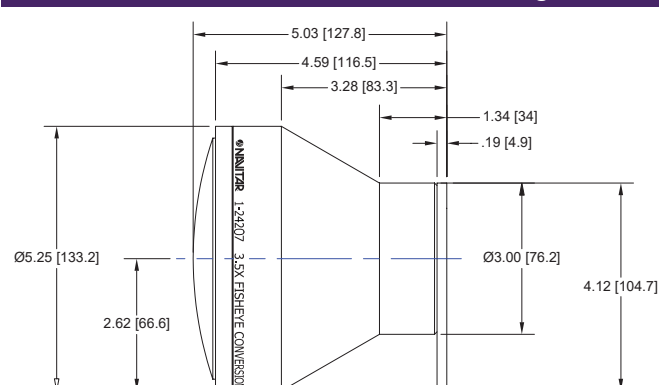
Active Image on Screen



Lens Specifications

Image Circle: 40 mm
Max FOV: 200°
F/#: F/2.5
F-Theta Distortion: < -23% Max
Focus Range: 1500 mm - ∞
MTF Center: 55% @ 73lp/mm
MTF Edge: 10% @ 50lp/mm
F-Theta Distortion: < -9.0% Max
Transmittance: 89.8% Axis
Relative Illumination: 80.5% Horizontal Field
Relative Illumination: 89.6% Trans. related
Relative Illumination: 65.9% Dist. related
Back Focus: TI 4K DLP

Line Drawing





ScreenStar Conversion Lens

Navitar ScreenStar wide-angle and long-throw conversion lenses sit in front of a projector's standard lens to increase or decrease picture size or throw distance. These lenses decrease costs by reducing the number of projectors needed for installations, and allowing users to select consumer off-the-shelf projectors.

ScreenStar Conversion Lenses				
	Part #	Description	Image Conversion	Mount Part #
Standard	SSW065	0.65X Wide-angle converter	50% Larger	I-17262
	SST120	1.20X Telephoto converter	17% Smaller	I-17263
	SST150	1.50X Telephoto converter	33% Smaller	I-17262
	SST300 *	3.00X Telephoto converter	67% Smaller	-----
Mini	SSC065	0.65X Mini wide-angle converter	50% Larger	I-17264
HD	HDSSW08	0.8X HD wide-angle converter	25% Larger	I-17262
	HDSSW065	0.65X HD wide-angle converter	50% Larger	I-17262
These highly-corrected lens systems, optimized for 1080P resolution, also complement other formats such as WXGA, WUXGA, WQXGA and smaller format 2K. These lenses support high resolution graphics and video input as required in training and simulation applications.				

* Stabilizing leg and table mount are not available for this model

Stabilizing leg is included with all ScreenStar models with the exception of the SST300. The leg allows for secure placement of the lens in front of the prime lens of the projector. Table mounts for ScreenStar lenses allow for placement of the lens in front of projector and height and tilt adjustment of the lens (for all models except the SST300).



Ceiling Mounts

Ceiling mount adapters for ScreenStar lenses are available directly from Chief Manufacturing (part #NAV1 and NAV2).

For high-volume OEM orders, Navitar's engineering team can design a custom mount if required. Please contact us to discuss your needs.



NAV-Z1014

Zoom Lens

Mid-Range Zoom

Lens Specifications	
Throw Ratio:	1 - 1.4:1
Throw Distance:	2 m - 30 m
Focal Length:	16.6 mm - 23.2 mm
Image Circle:	12.1 mm
Image Shift:	50° of full vertical
F/#:	f/2.9 - f/3.5
Focus Range:	2 m - ∞
Visible Transmission:	80%
IR Transmission:	74%
Resolution:	4096 x 2160
Pixel Pitch:	4.05 µm
Back Focus Glass:	46.435 mm
Back Focus Air:	Air 46.099 mm

Specification	Value at Throw Ratio		
	1.0:1	1.1:1	1.4:1
Lateral Color, R - G	< 0.29	< 0.30	< 0.25
Lateral Color, B - G	< 0.20	< 0.16	< 0.24
Maximum Distortion	-5.0%	-4.6%	-3.7%

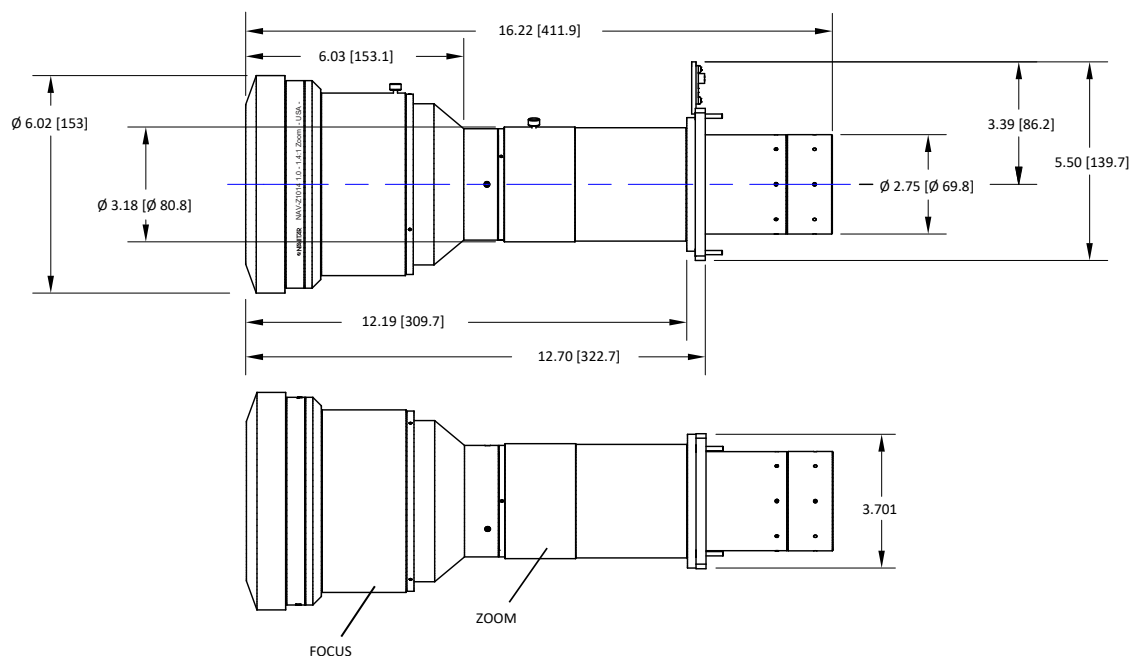
NAV-Z1014 Model Numbers

Part Number Projector Brand

I-100500 Sony GTZ380

Note: Part numbers vary depending on projector manufacturer and model. Call for a Quote.

Line Drawing



Special Order Legacy Lens Solutions

Navitar projection lenses are optimized to work with specific projection equipment, configurations and technologies. For lenses that are designed to work with older projection equipment, the reduced demand makes it difficult to keep inventory on hand. While we do not maintain inventory of these legacy lenses, they can be built to fulfill specific orders. Reach out to one of our talented staff to discuss pricing or explore a custom design to work for a unique application.

Legacy Lens	Projection Panels	Projector Options	Focal Length	F/#	Throw Ratio	H FOV	V FOV
HS48	0.96" Single Chip	Barco, Christie, Digital Projection, Epson, Norxe	4.8 mm	F/2.5	---	185.9°	160.2°
HS68	0.96" Single Chip	Barco, Christie, Digital Projection, Norxe	6.8 mm	F/3	---	180°	112.7°
HM74	0.90" Single Chip	Barco, Christie, Digital Projection, Norxe	7.4 mm	F/2.5		160.1°	95.1°
HM79	0.96" Single Chip	Barco, Digital Projection	7.9 mm	F/2.5	---	160.1°	95.1°
HMI17	0.96" Single Chip	Barco, Christie, Digital Projection, Norxe	11.7 mm	F/2.5	---	108°	64.9°
HMI24	0.96" Single Chip	Barco	12.4 mm	F/2.4	---	101.4°	61.1°
HM4K-58	0.74" SXRD	Sony	5.8 mm	F/3	---	168.7°	86.5°
HMR197	1.55" SXRD	Sony	19.5 mm	F/3.2	---	102.2°	53.6°
E3269	0.74" SXRD	Sony	10.7 mm	F/2.8	0.65 : 1		
4K-S-0.90	1.46" SXRD	Sony	29.5 mm	F/2.5	0.9 : 1		
L4KZ-3153-45-HC	1.38" 3 Chip	Barco, Christie	31 - 53 mm	F/4.5	1 - 1.7:1		
HMR84	1.38" 3 Chip	Barco, Christie, Digital Projection, NEC	8.35 mm	F/2.5	---	177.4°	115.47°
HSRZ-55	1.38" 3 Chip	Barco, Christie, Digital Projection, NEC	5.5 - 6.5 mm	F/2.5	---	189.6°	179.4°
E3486	0.69" D-ILA	JVC	5.1 mm	F/3.5	---	180°	95°
HM4K-90	0.69" D-ILA	JVC	9 mm	F/2.6	---	105.4°	52.8°
HM4K-168	1.27" D-ILA	JVC	16.8 mm	F/3.2	---	102.9°	57°
E2513	0.61" SXRD	Sony	15 mm	F/2.4	1.04 : 1	51.3°	35°
E3252	0.95" 3 Chip	Christie	13.6 mm	F/2.5	0.51 : 1	90°	49°
E3269	0.90" Single Chip	Christie	20 mm	F/1.96	1 : 1	55.5°	34.7°
E3305	0.95" 3 Chip	Christie	13.3 mm	F/2.5	---	90°	
E3306	0.95" 3 Chip	Christie	13.7 mm	F/2.5	---	90°	
E2835	1.38" 3 Chip	Christie	22 mm	F/2.7	0.57 : 1	82.4°	
E2835	1.38" 3 Chip	Christie	26.4 mm	F/2.7	0.73 : 1	68.8°	
E2897	1.38" 3 Chip	Barco, Christie	17 mm	F/2.5	---	110.0°	53.0°
E2911	1.38" 3 Chip	Barco	30.9 mm	F/2.5	1 : 1	53.2°	29.6°
E2935	1.38" 3 Chip	Barco	11.2 mm	F/2.5		170°	82°
E3825	1.38" 3 Chip	Christie	20.1 mm	F/2.5	0.65 : 1	75.1°	
E2527	1.27" D-ILA	JVC	18 mm	F/3.15		100°	51.5°
E2592	1.27" D-ILA	JVC	30 mm	F/3.15	1 : 1	53.6°	30.4°
E2782	1.27" D-ILA	JVC	9.66 mm	F/3.2		175.5°	96°
E2745	1.46" SXRD	Sony	19.48 mm	F/3.15	0.6 : 1	80°	
E2822	1.46" SXRD	Sony	11.8 mm	F/2.8		180°	88°



200 Commerce Drive, Rochester, New York 14623
info@navitar.com | 585.359.4000 | www.navitar.com