PRODUCT BROCHURE

GERMANIUM-REDUCED OPTICS FOR VGA 12–10 µm DETECTORS

COMPLETE H-FOV COVERAGE FOR VGA 12 µm DETECTORS



FULL VGA H-FOV COVERAGE. REDUCED GERMANIUM DEPENDENCY. NO PERFORMANCE COMPROMISE.

Designed with germanium-reduced optical solutions, the LightIR 15-75mm f/1.2 LWIR zoom lens and 1-FOV lenses offering ensures long-term availability, pricing stability, and robust supply continuity, without compromising optical performance.

The lenses deliver high optical performance, fast apertures, and long-term supply stability, making them ideal for defense, security, and industrial thermal imaging applications.

Why Germanium-Reduced? A Clear Immediate & Long-Term Advantages

Traditional Germanium Optics	Germanium-Reduced Solutions
Volatile raw material pricing	Stable pricing
Supply chain uncertainty	Reliable availability
Export & sourcing sensitivity	Reduced sourcing risk
Performance driven by material constraints	Performance-driven optical design
Program risk increases over time	Lower lifecycle and procurement risk

LWIR Fixed-Focus (1-FOV) Lenses Germanium Free

The LWIR fixed-focus (1-FOV) lenses deliver full horizontal field-of-view coverage for VGA (640×512) detectors with 12 µm pixel pitch - from ultra-wide situational awareness to narrow-FOV identification - enabling system designers to maintain optical consistency across platforms while scaling FOV as needed.

KEY BENEFITS

- Germanium-free designs for supply chain resilience
- Complete 1-FOV H-FOV coverage — 86° down to 6°
- Improved performance thanks to re-engineering processes
- Ideal for long-term programs and volume production

TYPICAL APPLICATIONS

- Defense & homeland security systems
- Surveillance and situational awareness
- Ground, airborne, and naval thermal imaging platforms
- Industrial and infrastructure monitoring

LWIR 1-FOV Lens Portfolio

A family of fixed-focus lenses providing complete horizontal FOV coverage for VGA (640×512) 12 µm LWIR detectors — from ultra-wide situational awareness to narrow-FOV identification.

Portfolio Table

Product Number	Focal Length (mm)	F/#	H-FOV (deg)*
680582	15-75	f/1.2	29.9° (WFOV) 5.8° (NFOV)
680596	5.5	f/1.2	86°
680310	8.7	f/1.0	50°
680258	9.0	f/1.4	49°
680407	9.2	f/1.0	50°
680269	9.3	f/1.3	48°
680412	13.6	f/1.0	32°
680312	19.8	f/1.2	21.7°
680602	24.0	f/1.0	18°
680193	50.0	f/1.2	8.8°
680603	73.1	f/1.05	6°

*H-FOV values are calculated for a 12 µm, 640×512 LWIR detector.

Detailed Lens Specifications

SupIR 5.5mm f/1.2, Fixed Athermalized
680596

LWIR 1-FOV



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HFOV	320x240	640x512
17µ	58.7°	
12µ	40.7°	86.1°
10µ	33.7°	70.0°

Property	Value				
Optical					
Average transmission (8-12µm)	95% (HD)				
Environmental					
Operation Temperature	-40°C to +80°C				
Storage Temperature	-55°C to +85°C				
Sealing	IP 67 front element only				
Configurations	**Weight**	**Dimensions**	**BWD**	**Thread**	**Coating**
680596-001	12.4gr	Ø19.94mm x 16mm	7.8	M19x0.5	HC
680596-002					HD

SupIR 8.7mm f/1.0, Fixed Athermalized
680310

LWIR
1-FOV



Ge FREE

HFOV	320x240	640x512	1024x768
17µ	35.3°	71.8°	
12µ	24.9°	50.1°	
10µ	20.8°	41.6°	67.4°

Property	Value
Optical	
Average transmission (8-12µm)	90% (HD) / 88% (HC)
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-54°C to +85°C
Sealing	IP 67 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680310-005	25.4gr	Ø26.0mm x 21.7mm	5.76	M24x0.5	HD
680310-006					HC

SupIR 9.0mm f/1.4, Fixed Athermalized
680258

LWIR
1-FOV



Ge FREE

HFOV	320x240	640x512	1024x768
17µ	34.6°	71.2°	
12µ	24.3°	49.3°	81.5°

Property	Value
Optical	
Average transmission (8-12µm)	94% (HD) / 92% (HC)
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-50°C to +85°C
Sealing	IP 67 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680258-003	35gr	Ø38.1mm x 17mm	9.7	M34x0.5	HD
680258-004					HC

SupIR 9.2mm f/1.0, Fixed Athermalized
680407

LWIR
1-FOV



Ge FREE

HFOV	320x240	640x512
17µ	34.6°	
12µ	24.2°	50.0°
10µ	20.1°	41.0°

Property	Value
Optical	
Average transmission (8-12µm)	92% (HD) / 84% (HC)
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-55°C to +85°C
Sealing	IP 67 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680407-001	12.8gr	Ø20.0mm x 21.7mm	4.35	M18x0.5	HD
680407-002					HC
680407-003	13.4gr	Ø19.95mm x 14.4mm	6.93	M19x0.5	HD
680407-004					HC

SupIR 9.3mm f/1.3, Fixed Athermalized
680269

LWIR
1-FOV



Ge FREE

HFOV	320x240	640x512
17µ	34.0°	
12µ	24.0°	48.1°
10µ		40.0°

Property	Value
Optical	
Average transmission (8-12µm)	88%
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-40°C to +85°C
Sealing	IP 67 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680269-001	16.6gr	Ø24.46mm x 12.1mm	13.387	M24x0.5	HD
680269-002					HC
680269-003					HC, MWIR block filter

SupIR 13.6mm f/1.0, Fixed Athermalized
680412

LWIR
1-FOV



Ge FREE

HFOV	320x240	640x512
17µ	22.8°	
12µ	16.2°	32.0°
10µ	13.5°	26.8°

Property	Value
Optical	
Average transmission (8-12µm)	91% (HD) / 88% (LRHC)
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-50°C to +85°C
Sealing	IP 67 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680412-003	12.7gr	Ø20.6mm x 18mm	4.35	M18x0.5	HD
680412-004					LRHC

SupIR 19.8mm f/1.2, Fixed Athermalized
680312

LWIR
1-FOV



Ge FREE

HFOV	320x240	640x512
17µ	15.5°	
12µ	11.0°	21.7°
10µ		18.2°

Property	Value
Optical	
Average transmission (8-12µm)	91% (HD) / 90% (HC)
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-54°C to +85°C
Sealing	IP 67 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680312-001	14.9gr	Ø24.46mm x 13.6mm	13.9	M24x0.5	HD
680312-002					HC

SupIR 24mm f/1.0, Fixed Athermalized
680602

LWIR
1-FOV



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HD FORMAT

HFOV	320x240	640x512	672x544	1280x720
17µ	12.8°	25.5°	26.8°	
12µ	9.0°	18.0°	18.9°	
10µ	7.5°	15.0°	15.8°	30.2°

Property	Value
Optical	
Average transmission (8-12µm)	87% (HC) / 92% (HD)
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-55°C to +85°C
Sealing	IP 67 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680602-001	41gr	Ø34mm x 29.45mm	4.85	M24x0.5	HD
680602-002					HC

SupIR 33.5mm f/1.3, Fixed Focus
680577

LWIR
1-FOV



Ge FREE

HFOV	640x512
12µ	13.1°

Property	Value
Optical	
Average transmission (8-12µm)	≤89% (HC)
Environmental	
Operation Temperature	-32°C to +71°C
Storage Temperature	-40°C to +80°C
Sealing	IP 68 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680577-002	≤30gr	Ø31mm x 32mm	5.75	M24x0.5	HD
680577-003					HC with protective window

SupIR 50mm f/1.2, Manual Athermalized
680193

LWIR
1-FOV



Ge FREE

HFOV	320x240	640x512	1024x768
17µ	6.2°	12.4°	19.8°
12µ	4.4°	8.8°	14.0°

Property	Value
Optical	
Average transmission (8-12µm)	92% (HD) / 85% (HC)
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-55°C to +85°C
Sealing	IP 68 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680193-001	216gr	Ø53mm x 57.4mm	13.65	2 5/16"-36 UNS	HD
680193-002					HC

SupIR 73.1mm f/1.05, Fixed Athermalized
680603

LWIR 1-FOV



Ge FREE

HFOV	320x240	640x512	1024x768
17µ	4.3°	8.5°	
12µ	3.0°	6.0°	9.55°
10µ	2.5°	5.0°	7.98°

Property	Value
Optical	
Average transmission (8-12µm)	88% (HD) / 85.5% (HC)
Environmental	
Operation Temperature	-40°C to +80°C
Storage Temperature	-54°C to +85°C
Sealing	IP 67 front element only

Configurations	Weight	Dimensions	BWD	Thread	Coating
680603-001	393.1gr	Ø82mm x 83.2mm	5.98	M34x0.5	HD
680603-002					HC
680603-003					HE
680603-004					HD.H
680603-005	392.2gr	Ø82mm x 83.2mm	7.98		HD
680603-006					HC

SupIR 15-75mm f/1.2, Motorized Continuous Zoom
680582

LWIR ZOOM



Ge FREE

WFOV (15mm)

HFOV	320x240	640x512
17µ	20.9°	43.4°
12µ	14.7°	29.9°
10µ		24.8°

NFOV (75mm)

HFOV	320x240	640x512
17µ	4.1°	8.2°
12µ	2.9°	5.8°
10µ		4.9°

Property	Value	
Optical	**WFOV**	**NFOV**
Average transmission (8-12µm)	91% (HD) / 86% (HC)	
Minimum Focus Range	7m	18m
Nuc (by defocus)	Yes	
Mechanical		
Focus Time (minimum range to ∞)	≤1 sec.	
Zoom Time (NFOV to WFOV)	≤5.5 sec.	
Weight	349gr	
Max. Dimensions	Ø75mm x 75.6mm	
Electrical		
Lens Control	Designated lens controller	
Supply Voltage	12V	
Current Consumption	<0.15A average, 0.3A peak	
Communication Protocol	RS485, RS422, RS232	
Environmental		
Operation Temperature	-32°C to +70°C	
Storage Temperature	-40°C to +80°C	
Sealing	IP 67 front element only	
Configurations		
680582-001	HD	
680582-002	HC	
680582-003	HD Hydrophobic	
680582-004	HC Hydrophobic	
Accessories		

Detector	Adaptor type	Kit catalog number
12µm 640x512	Threaded M34x0.5-6h	808458-201
	Fixed spacer	808459-201



About Ophir an MKS Inc. Brand

With five decades worth of knowledge and experience, MKS's Ophir Infrared Optics product line is a world leading designer and manufacturer of high-performance IR thermal imaging systems and optics for SWIR, MWIR & LWIR imaging. Using advanced technologies and innovative engineering we provide a global solution for homeland security, surveillance, defense and commercial applications: infrared thermal imaging cameras, complex lens assemblies and components.

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