

LIGHTWEIGHT, COMPACT, HIGH-PERFORMANCE LOW-SWAP COOLED MWIR & UNCOOLED LWIR SOLUTIONS



LightIR 15-75mm f/1.2
Optimized for LWIR 10 μ m pitch
VGA cameras



LightIR 18-225mm f/4 **NEW**
Optimized for 10 μ m SXGA and
15 μ m VGA detectors



LightIR 20-275mm f/5.5
Designed for MWIR 15 μ m
VGA cameras

Light IR
By Ophir



WHERE MINIMAL IS CRITICAL

Overview

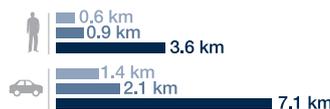
The LightIR thermal imaging zoom lenses are lightweight, compact and high-performance, designed for use in a wide range of reduced SWaP applications, including unmanned aerial systems (UASs), unmanned aerial vehicles (UAV), aircraft vision systems, drones, and handheld applications such as thermal imagers (HHTI).

The outstanding optomechanical design of the LightIR product family ensures that these lenses are the smallest, lightest and most compact on the market today, while still achieving the highest levels of infrared thermal imaging performance.

Key features

- High MTF performance
- Extremely compact configuration
- Optimized for stabilized payloads
- Suitable for a wide range of low-SWaP applications
- Maintains focus through the entire zoom range
- Compatible with major MWIR and LWIR detectors
- Designed to withstand harsh environmental conditions

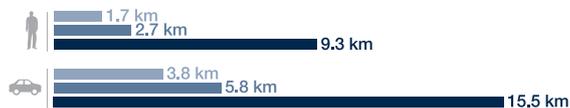
LightIR 15-75mm f/1.2



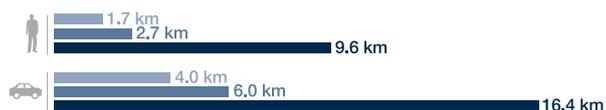
LightIR 10-135mm f/3.6



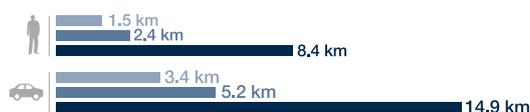
LightIR 18-225mm f/3.6



LightIR 18-225mm f/4



LightIR 20-275mm f/5.5



Note: Calculation used are based on "Johnson Criteria" | Real world performance may vary depending on the weather conditions

* Assumptions: 32mK NETD f/3.6 | 23mK NETD (f/4 & f/5.5) | 30Hz frame rate | 0.2km⁻¹ atmospheric attenuation coefficient | 50% detection probability

THE LIGHTEST, MOST COMPACT, & HIGHEST PERFORMANCE THERMAL IMAGING ZOOM LENSES


Light IR
By Ophir



LightIR 10-135mm f/3.6, Motorized Continuous Zoom

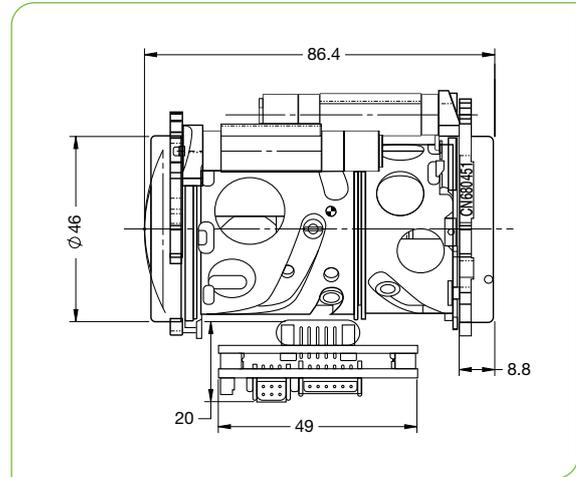
Designed for MWIR 10 μ m VGA Detectors

680451

Cooled MWIR

TYPICAL ICD

NEW



WFOV (10mm)

NFOV (135mm)

HFOV	640x512	HFOV	640x512
10 μ	18.5°	10 μ	1.3°

Property	Value	
Optical	WFOV	NFOV
Focal Length	10mm	135mm
F#	3.6	
Average transmission (3.4-4.2 μ m)	>87% (HD) / \geq 80% (HC)	
Cold stop to FPA Distance	12mm	
Cold Stop CA	\varnothing 12mm	
Back Focal Length	\geq 17mm in air	
Distortion (in diagonal)	2.5%	2%
Minimum Focusing Range	5m	500m
Nuc (by defocus)	Blur to 7mm diameter	
Mechanical		
Focus Mechanism	Motorized. Adjustable	
Focus Time (minimum range to ∞)	1 sec.	
Zoom Time (NFOV to WFOV)	4 sec.	
Max. Dimensions	\varnothing 46x86.4mm	
Weight	250gr	
Electrical		
Lens Control	Designated lens controller	
Supply Voltage	6-12VDC	
Current Consumption	< 0.5A average, 1.0A peak	
Communication Protocol	RS422	
Environmental		
Operation Temperature	-32°C to +75°C	
Storage Temperature	-54°C to +85°C	
Sealing	IP67 front lens only	
Configurations		
680451-001	High Durability	
680451-002	Hard Carbon	

LightIR 18-225mm f/3.6 Motorized Continuous Zoom

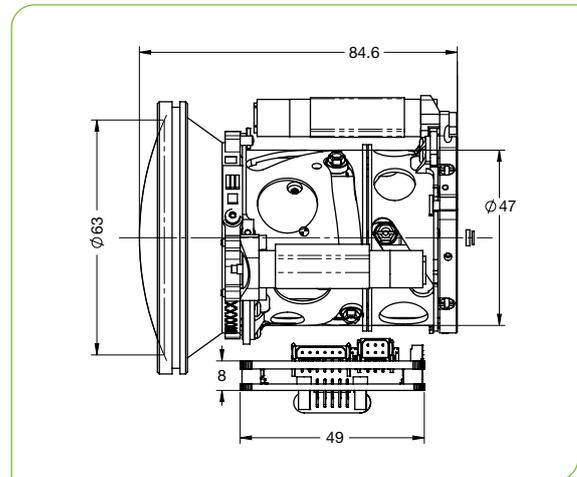
Designed for MWIR 10μm pitch VGA FPA

680442

Cooled MWIR

TYPICAL ICD

NEW



WFOV (18mm)

NFOV (225mm)

HFOV	640x512	HFOV	640x512
10μ	20°	10μ	1.6°

Property	Value	
Optical	WFOV	NFOV
Focal Length	18	225
F#	3.6	
Average transmission (3.4-4.2μm)	>87% (HD) / ≥80% (LRHC)	
Cold stop to FPA Distance	12mm	
Cold Stop CA	Ø3.34mm	
Back Focal Length	18.5mm in air	
Distortion	1.9%	4%
Minimum Focusing Range	5m	50m
Nuc (by defocus)	Blur to 7mm diameter	
Mechanical		
Focus Mechanism	Motorized. Adjustable	
Focus Time (minimum range to ∞)	<2 sec.	
Zoom Time (NFOV to WFOV)	<5 sec.	
Max. Dimensions	Ø63mm x 84.6mm	
Weight	<300gr	
Electrical		
Lens Control	Designated lens controller	
Supply Voltage	6-12VDC	
Current Consumption	< 0.5A average, 1.0A peak	
Communication Protocol	RS422	
Environmental		
Operation Temperature	-32°C to +80°C	
Storage Temperature	-54°C to +80°C	
Sealing	IP67 front lens only	
Configurations		
680442-001	High Durability	
680442-002	Low Reflection Hard Carbon	

LightIR 18-225mm f/4 Motorized Continuous Zoom

Optimized for 10µm SXGA and 15µm

VGA detectors

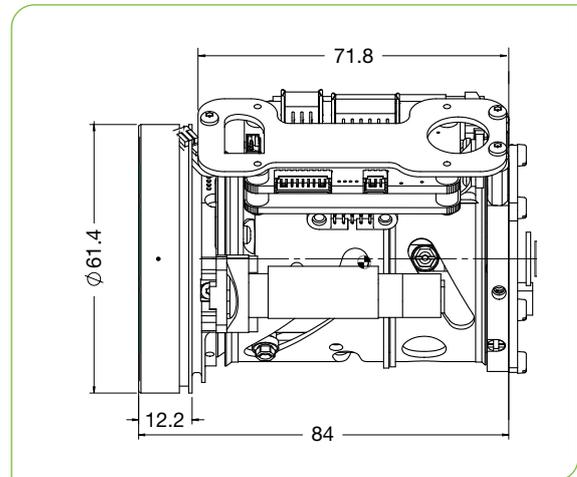
680473

Cooled MWIR

TYPICAL ICD

NEW

HD
FORMAT



WFOV (18mm)

HFOV	320x256	480x384	640x512	1280x1024
15µ	15.2°	22.6°	29.9°	
10µ	10.2°	15.2°	20.2°	39.1°

NFOV (225mm)

HFOV	320x256	480x384	640x512	1280x1024
15µ	1.2°	1.8°	2.4°	
10µ	0.8°	1.2°	1.6°	3.3°

Property	Value	
Optical	WFOV	NFOV
Focal Length	18	225
Average transmission (3.4-4.9µm)	≥87% (HD)/ ≥80% (LRHC)	
Cold stop to FPA Distance	19.4-20.5mm	
Back Focal Length	26.9mm in air (with 1+0.5mm Ge windows)	
Distortion in diagonal	< 2.5%	< 0.5%
Minimum Focusing Range	5m	50m
Nuc (by defocus)	Yes	
Mechanical		
Focus Mechanism	Motorized. Adjustable	
Focus Time (minimum range to ∞)	<2 sec.	
Zoom Time (NFOV to WFOV)	<5 sec.	
Max. Dimensions	Ø61.4 x 84mm	
Weight	326gr	
Electrical		
Lens Control	Designated lens controller	
Supply Voltage	6-12VDC	
Current Consumption	< 0.5A average, 1.0A peak	
Communication Protocol	RS422	
Environmental		
Operation Temperature	-32°C to +75°C	
Storage Temperature	-54°C to +85°C	
Sealing	IP67 front element only	
Configurations		
680473-001	High Durability	
680473-002	Low Reflection Hard Carbon	

LightIR 20-275mm f/5.5, Motorized Continuous Zoom 680314

Cooled MWIR



WFOV (EFL 20mm)

HFOV[deg]	480x384	640x512
20μ	28.0°	
15μ	20.9°	28.0°

NFOV (EFL 275mm)

HFOV[deg]	480x384	640x512
20μ	1.9°	
15μ	1.5°	1.9°

Property	Value	
Optical	WFOV	NFOV
Focal Length	20mm	275mm
F#	5.5	
Back Focal Length	23.52mm in air	
Cold stop to FPA distance	19.7mm	
Minimum Focusing Range	5m	50m
Mechanical		
Max. Dimensions	Ø58 X 67.1mm	
Weight	264 gr	
Electrical		
Supply Voltage	12V (Can be configured to 6V-12V)	
Current Consumption	0.2A average, 1.0A peak	
Communication Interface	RS485, RS422	

LightIR 15-75mm f/1.2, Motorized Continuous Zoom Designed and optimized for 10-12μm pixel pitch camera 680386

Uncooled LWIR



WFOV(15mm)

HFOV[deg]	480x384	640x512
25μ	48.4°	
20μ	38.0°	52.0°
17μ	31.9°	43.4°
12μ	22.2°	29.9°
10μ		24.8°

NFOV(75mm)

HFOV[deg]	480x384	640x512
25μ	9.0°	
20μ	7.2°	9.6°
17μ	6.2°	8.2°
12μ	4.4°	5.8°
10μ		4.9°

Property	Value	
Optical	WFOV	NFOV
Focal Length	15mm	75mm
F/#	1.2	
Back focal length	20.76mm in air	24.28mm in air
Mechanical		
Max. Dimensions	Ø75 X 88mm	
Weight	320 gr	
Electrical		
Supply Voltage	12V	
Current Consumption	<0.15A average, 0.3A peak	
Communication Interface	RS 485, RS 422, RS 232	



About Ophir Infrared Optics

With decades worth of knowledge and experience, Ophir Optronics Solutions LTD., Infrared Optics, an MKS Brand (NASDAQ: MKSI), is a world-leading designer and manufacturer of high-performance IR thermal imaging lenses and optical elements for SWIR, MWIR & LWIR imaging. Using advanced technologies, innovative engineering, and design configurations, Ophir provides a global solution for homeland security, surveillance, defense and commercial applications: IR components and complex lens assemblies with fixed or motorized focus and zoom lenses.

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