

**YOUR OPTICS PARTNER FOR  
COUNTER DRONE SYSTEMS  
IR LONG RANGE ZOOM LENSES  
LWIR, MWIR, SWIR SOLUTIONS**



## MINIMIZE FALSE POSITIVE ALERTS WITH OPHIR'S INFRARED CONTINUOUS ZOOM LENSES FOR HIGH-PERFORMANCE, EXTENDED VISION RANGE

Drones' proliferation in recent century raise potential security threats to both civilian and military entities. Such threats triggered to a new, rapidly emerging Counter-Unmanned Aerial Systems (C-UAS) technologies. Its mission is to detect, identify and disable such threats. Infrared (IR) based systems, or IR imaging combined in such multi-sensor types systems, is a prevalent technology enabling **detection, identification and tracking** the small unmanned aerial system (sUAS). Ophir designs and manufactures precise, long-range IR continuous zoom lenses for integration into premier C-UAS platforms.

**Partnering with leading defense OEMs** to design IR based C-UAS electro-optical systems, along with a proven track-record of numerous deployments in the field, we deliver a wide selection of extended range IR thermal continuous zoom lenses.

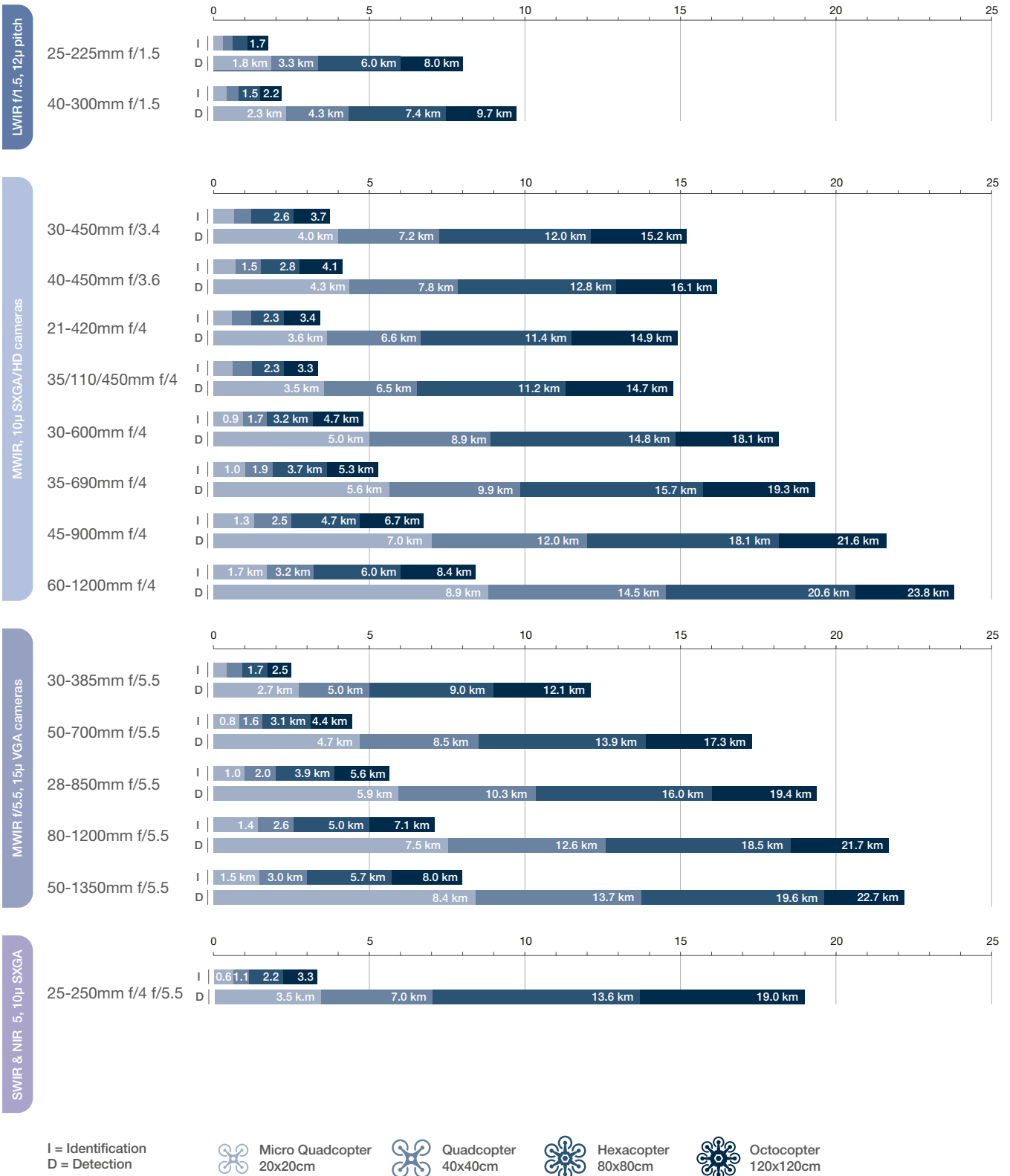
**Incorporating top infrared performance** for mission success means delivering outstanding detection and identification capabilities. Our lenses provide crisp, clear imagery across the full zoom range, with Modulation Transfer Function (MTF) quality close to the diffraction limit and precise line-of-sight (LOS) accuracy. These features ensure that high frame rate sensors can avoid image blurring even with fast-moving targets. Early and accurate identification is crucial for minimizing false positive alerts, and Ophir's continuous zoom capabilities ensure that targets can be tracked without losing sight.

**The key to successful threat identification** is to make sure that it covers enough pixels of the chosen sensor. Ophir's continuous zoom lenses provide optical reach to take advantage of early radar detection. A precision zoom lens allows the operator to scan the area in wide field of view to note terrain or other interference. Use of narrow field of view allows the operator to further identify the threat.

### Products Characteristics

- High precision optics with MTF close to the diffraction limit
- Continuous zoom providing adequate, focused pixels on target
- Focus maintained through the full zoom range/ entire field-of-view range
- Tight boresight retention
- Extended identification ranges exceeding 8km
- Ruggedized design for durability in harshest environmental conditions
- Accurate Line-of-Sight (LOS)
- Focal length ranges from 21mm to 1350mm
- US and European military standard compliance for temperature, shock, vibration and environmental sealing including DIN 3140, IPC 620, MIL-PRF 13830, Mil-PRF 85285, MIL STD 810, MIL-C-48497, MIL-C-48616, ISO 10110 sections 1-19, ANSINASQ Z1.4.

## Target Identification and Detection Ranges (Km)



Assumptions: NETD LWIR f/1.5 50mK | NETD MWIR 35.5mK (f/3.4); 32mK (f/3.6); 32mK (f/4, f/5.5) | 2°C target ΔT | 30Hz frame rate LWIR MWIR | 25Hz frame rate SWIR at 0.7µm to 1.7µm spectral range, day mode TRM4 model, 10µm pitch Cardinal 1280 detector, overcast daylight irradiance | 0.2km<sup>-1</sup> atmospheric attenuation coefficient | 50% detection probability | 0.2 path radiance factor | 250m drone altitude (above ground) | 50% drone reflectivity | 15% background reflectivity

# SupIR 25-225mm f/1.5, Motorized Continuous Zoom 680157

LWIR  
f/1.5



HD  
FORMAT

### WFOV (25mm)

HFOV	320x240	640x480	1024x768	1280x1024
25μ	18.4°	37.6°		
17μ	12.5°	25.2°	41.1°	
12μ	8.8°	17.7°	28.6°	35.9°

### NFOV (225mm)

HFOV	320x240	640x480	1024x768	1280x1024
25μ	2.0°	4.1°		
17μ	1.4°	2.8°	4.4°	
12μ	1.0°	1.9°	3.1°	3.9°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	1.5	
Minimum Focus Range	1m	>90m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤3 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤8 sec. (continuous zoom mode); ≤5 sec. (multi-field of view mode)	
Weight	4.3kg	
Max. Dimensions	Ø178 x 226.5mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	0.5A average, 3.5A peak	
Communication Protocol	RS422	

# SupIR 40-300mm f/1.5, Motorized Continuous Zoom 680264

LWIR  
f/1.5



HD  
FORMAT

### WFOV (40mm)

HFOV	320x240	640x480	1024x768
25μ	12.2°	24.5°	
17μ	8.3°	16.6°	26.8°
12μ	5.8°	11.7°	18.8°

### NFOV (300mm)

HFOV	320x240	640x480	1024x768
25μ	1.5°	3.0°	
17μ	1.0°	2.1°	3.3°
12μ	0.7°	1.5°	2.3°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	1.5	
Minimum Focus Range	2m	10m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤1 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤9 sec. at -32°C; ≤6 sec. at T ≥ 0°C	
Weight	9.5kg	
Max. Dimensions	Ø222mm x 300mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	< 0.8A average, 1.5A peak	
Communication Protocol	RS422	

# FoldIR 30-450mm f/3.4, Motorized Continuous Zoom 680465\*

MWIR  
f/3.4

NEW



HD  
FORMAT

WFOV (30mm)		
HFOV	640x480	1280x1024
15μ	19.3°	
10μ	12.5°	26.9°

NFOV (450mm)		
HFOV	640x480	1280x1024
15μ	1.3°	
10μ	0.8°	1.7°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	3.4	
Minimum Focus Range	20m	50m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤1 sec.	
Zoom Time (NFOV to WFOV)	≤5 sec.	
Weight	2kg	
Max. Dimensions	Ø146mm x 247mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	0.5A average, 1.0A peak	
Communication Protocol	RS422, RS232	

\* Requires export license

# FoldIR 40-450mm f/3.6, Motorized Continuous Zoom 680533\*

MWIR  
f/3.6

NEW



WFOV (40mm)	
HFOV	640x480
10μ	8.9°

NFOV (450mm)	
HFOV	640x480
10μ	0.85°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	3.6	
Minimum Focus Range	50m	5m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤5.5 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤1 sec.	
Weight	1.85kg	
Max. Dimensions	Ø165 x length 222mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12VDC	
Current consumption	<0.5A average, 1.0A peak	
Communication Protocol	RS422	

\* Requires export license

# SupIR 21-420mm f/4.0, Motorized Continuous Zoom 680160

MWIR  
f/4.0



HD  
FORMAT

WFOV (21mm)	
HFOV	640x512
15μ	25.1°
10μ	

WFOV (33mm)	
HFOV	1280x1024
10μ	20.0°

NFOV (420mm)		
HFOV	640x512	1280x1024
15μ	1.3°	
10μ		1.7°

Property	Value		
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>	
F/#	4.0		
Minimum Focus Range	10m	100m	
<b>Mechanical</b>			
Focus Mechanism	Motorized		
Focus Time (minimum range to ∞)	≤1 sec. at maximum speed		
Zoom mechanism	Motorized		
Zoom Time (NFOV to WFOV)	≤8 sec. at -32°C; ≤5 sec. at T≥20°C (at max speed)		
Weight	1.6kg		
Max. Dimensions	Ø132x200.5mm		
<b>Electrical</b>			
Lens Control	Designated lens controller		
Supply voltage	12V		
Current consumption	0.5A average, 1.0A peak		
Communication Protocol	RS422		

# SupIR 35/110/450mm f/4.0, Motorized Continuous Zoom 680374

MWIR  
f/4.0



HD  
FORMAT

WFOV (35mm)		
HFOV	640x512	1280x1024
15μ	15.2°	
10μ	10.3°	20.0°

MFOV (110mm)		
HFOV	640x512	1280x1024
15μ	4.9°	
10μ	3.3°	6.4°

NFOV (450mm)		
HFOV	640x512	1280x1024
15μ	1.2°	
10μ	0.8°	1.6°

Property	Value		
<b>Optical</b>	<b>WFOV</b>	<b>MFOV</b>	<b>NFOV</b>
F/#	4.0		
Minimum Focus Range	5m	10m	50m
<b>Mechanical</b>			
Focus Mechanism	Motorized		
Focus Time (minimum range to ∞)	≤5.5 sec.		
Zoom mechanism	Motorized		
Zoom Time (NFOV to WFOV)	≤1 sec. at T≥ 0°C; ≤2 sec. at -40°C		
Weight	2.4kg		
Max. Dimensions	Ø136mmx218.6mm		
<b>Electrical</b>			
Drive voltage	7.5V-12V		
Current consumption	0.05A Average, 0.06A peak		



# SupIR 30-600mm f/4.0, Motorized Continuous Zoom 680384/5

MWIR  
f/4.0



HD  
FORMAT

WFOV (30mm)	
HFOV	640x512
15μ	17.2°
10μ	

WFOV (60mm)	
HFOV	1280x1024
10μ	11.4°

NFOV (600mm)		
HFOV	640x512	1280x1024
15μ	0.9°	
10μ		1.2°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	4.0	
Minimum Focus Range	5m	200m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤1 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤7 sec. at -32°C; ≤5 sec. at T≥ 0°C	
Weight	3.1kg	
Max. Dimensions	Ø173mmx251.9mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	0.5A average, 1.0A peak	
Communication Protocol	RS422	

# SupIR 35-690mm f/4.0, Motorized Continuous Zoom 680294/5

MWIR  
f/4.0



HD  
FORMAT

WFOV (35mm)	
HFOV	640x512
15μ	15.2°
10μ	

WFOV (60mm)	
HFOV	1280x1024
10μ	11.5°

NFOV (690mm)		
HFOV	640x512	1280x1024
15μ	0.8°	
10μ		1.0°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	4.0	
Minimum Focus Range	5m	200m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤1 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤7 sec. at -32°C; ≤5 sec. at T≥ 0°C	
Weight	4kg	
Max. Dimensions	Ø210mm x 264mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	0.5A average, 1.0A peak	
Communication Protocol	RS422	

# SupIR 45-900mm f/4.0, Motorized Continuous Zoom 680425/6

MWIR  
f/4.0



HD  
FORMAT

**WFOV (45mm)**  
for configuration 680425-001/2  
& 680426-001/2

HFOV	640x512
15μ	11.4°
10μ	

**WFOV (72mm)** for configuration  
680425-003/4 & 680426-003/4

HFOV	640x512	1280x1024
15μ	7.3°	
10μ		9.3°

**NFOV (900mm)** all configurations

HFOV	640x512	1280x1024
15μ	0.6°	
10μ		0.8°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	4.0	
Minimum Focus Range	5m	200m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤1 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤7 sec. at -32°C; ≤5 sec. at T ≥ 0°C	
Weight	7kg	
Max. Dimensions	Ø286 x 343.6mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	0.5A average, 1.0A peak	
Communication Protocol	RS422	

# SupIR 60-1200mm f/4 Motorized Continuous Zoom 680475/6

MWIR  
f/4.0



HD  
FORMAT

**WFOV (60mm)**

HFOV	640x512
15μ	8.6°

**WFOV (100mm)**

HFOV	640x512	1280x1024
15μ	5.3°	
10μ		6.8°

**NFOV (1200mm)**

HFOV	640x512	1280x1024
15μ	0.5°	
10μ		0.6°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	4.0	
Minimum Focus Range	<5m	<200m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤1 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤ 8 sec at -32°C; ≤ 5 sec. at T ≥ 20°C (at max. speed)	
Weight	14.6kg	
Max. Dimensions	Ø388mm x 409.2mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Drive voltage	12V	
Current consumption	0.5A average, 1.0A peak at T = -32°C; 0.2A average, 1.0A peak at T ≥ 20°C	
Communication Protocol	RS422	



# SupIR 30-385mm f/5.5, Motorized Continuous Zoom 680459

MWIR  
f/5.5



WFOV (30mm)	
HFOV	640x512
15μ	18.6°

NFOV (385mm)	
HFOV	640x512
15μ	1.4°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	5.5	
Minimum Focus Range	5m	70m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤8 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤ 5 sec.	
Weight	740gr	
Max. Dimensions	Ø98mm X 137.9mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	0.5A average, 1.0A peak at T = -32°C; 0.2A average, 1.0A peak at T ≥ 20°C	
Communication Protocol	RS485, RS422	

# SupIR 50-700mm f/5.5, Motorized Continuous Zoom 680472

MWIR  
f/5.5



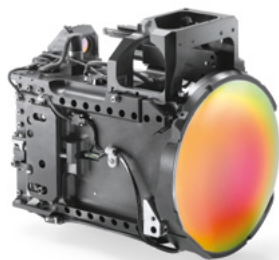
WFOV (50mm)	
HFOV	640x512
15μ	10.9°

NFOV (700mm)	
HFOV	640x512
15μ	0.8°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	5.5	
Minimum Focus Range	1m	33m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤8 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤ 5 sec.	
Weight	1.64kg	
Max. Dimensions	Ø156.2mm X 176.7mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	0.5A average, 1.0A peak at T = -32°C; 0.2A average, 1.0A peak at T ≥ 20°C	
Communication Protocol	RS485, RS422	

# SupIR 28-850mm f/5.5, Motorized Continuous Zoom 680072\*

MWIR  
f/5.5



**HD**  
FORMAT

### WFOV (28mm)

HFOV	640x512	1280x1024
15μ	19.8°	39.8°

### NFOV (850mm)

HFOV	640x512	1280x1024
15μ	0.6°	1.3°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	5.5	
Minimum Focus Range	3m	50m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤8 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤8 sec.	
Weight	4.6kg	
Max. Dimensions	Length 256mm; Width 176mm; Height 257.5mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	28VDC	
Current consumption	1.25A average, 2.5A peak	
Communication Protocol	RS422	

\* Requires export license

# SupIR 80-1200mm f/5.5 Motorized Continuous Zoom 680478

MWIR  
f/5.5



### WFOV (80mm)

HFOV	640x512
15μ	7.1°

### NFOV (1200mm)

HFOV	640x512
15μ	0.5°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	5.5	
Minimum Focus Range	5m	220m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤8 sec.	
Zoom mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤5 sec.	
Weight	7.4kg	
Max. Dimensions	Ø268mm x 325.5mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	0.5A average, 1.0A peak at T= -32°C; 0.2A average, 1.0A peak at T ≥ 20°C	
Communication Protocol	RS458, RS422	

# SupIR 50-1350mm f/5.5, Motorized Continuous Zoom 680356\*

MWIR  
f/5.5



**HD**  
FORMAT

WFOV (50mm)		
HFOV	640x512	1280x1024
15μ	10.8°	20.5°

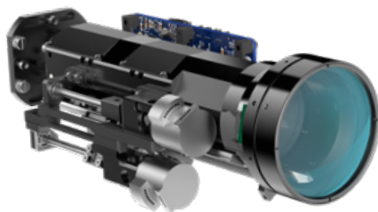
NFOV (1350mm)		
HFOV	640x512	1280x1024
15μ	0.4°	0.8°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	5.5	
Minimum focus range	5m	200m
<b>Mechanical</b>		
Focus Mechanism	Motorized	
Focus Time (minimum range to ∞)	≤8 sec.	
Zoom Mechanism	Motorized	
Zoom Time (NFOV to WFOV)	≤8 sec.	
Weight	15.6kg	
Max. Dimensions	Length 376.4mm; Ø281mm; height 293mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	28VDC	
Current consumption	1.25A average, 2.5A peak	
Communication interface	RS422	

\* Requires export license

# SWIR & NIR 25-250mm f/5.5 (NFOV) f/4.0 (WFOV) Motorized Continuous Zoom 680471

SWIR



**HD**  
FORMAT

WFOV (25mm)		
HFOV	640x512	1280x1024
15μ	21.7°	
10μ	14.7°	28.7°
5μ	7.3°	14.6°

NFOV (250mm)		
HFOV	640x512	1280x1024
15μ	2.2°	
10μ	1.5°	2.9°
5μ	0.7°	1.5°

Property	Value	
<b>Optical</b>	<b>WFOV</b>	<b>NFOV</b>
F/#	4.0	5.5
Minimum focus range	2m	20m
<b>Mechanical</b>		
Focus Mechanism	Motorized. Adjustable	
Focus Time (minimum range to ∞)	≤1 sec.	
Zoom Time (NFOV to WFOV)	≤5 sec.	
Weight	840g	
Max. Dimensions	Ø65mm x 214mm	
<b>Electrical</b>		
Lens Control	Designated lens controller	
Supply voltage	12V	
Current consumption	<0.5A (max)	
Communication interface	RS422	



### About Ophir IR Optics

With decades worth of knowledge and experience, Ophir Optronics Solutions LTD., Infrared Optics, an MKS Company (NASDAQ: MKSI), is a world-leading designer and manufacturer of high performance IR thermal lens assemblies 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, commercial and defense applications: complex lens assemblies with fixed or motorized focus and continuous zoom lenses and IR custom components.

#### International Headquarters Ophir Optronics Solutions Ltd.

Science based industrial park  
Har hotzvim P.O.B 45021  
Jerusalem, 9145001 Israel  
Tel. 972-2-5484444  
Fax. 972-2-5822338  
E-mail: [mktg@mksinst.com](mailto:mktg@mksinst.com)  
[www.ophiropt.com/infrared](http://www.ophiropt.com/infrared)

#### USA MKS Instruments Inc.

1791 Deere Avenue  
Irvine, CA 92606  
USA  
Tel. 520-260-9305  
E-mail: [USA.ophiroptics@mksinst.com](mailto:USA.ophiroptics@mksinst.com)  
[www.ophiropt.com/infrared](http://www.ophiropt.com/infrared)

#### EUROPE Ophir optronics solutions Ltd.

La chenevarie 42140  
Virigneux, France  
Tel. 33-9-7785 3478  
Fax. 972-2-5822 338  
E-mail: [Europe.ophiroptics@mksinst.com](mailto:Europe.ophiroptics@mksinst.com)  
[www.ophiropt.com/infrared](http://www.ophiropt.com/infrared)

#### KOREA Unetware Inc.

3F, 287-31, Jegi-dong,  
Dongdaemun-gu,  
Seoul, Korea 130-060  
Tel. 82-(0)2-790-7830/1  
Fax. 82-(0)2-790-0780  
E-mail: [ysmo53@unetware.com](mailto:y-smo53@unetware.com)  
<https://www.ophiropt.com/infrared>

#### INDIA MKS Instruments Atotech Products

Plot No. 446 G & H,  
Sector 8, Phase IV, IMT  
Manesar-122050  
Gurugram - Haryana  
Tel. +91 124 6447900  
E-mail: [Indiasales@atotech.com](mailto:Indiasales@atotech.com)

#### JAPAN Ophir Japan Ltd.

Kudan First Place 6F,  
4-1-28 Kudan-kita, Chiyoda-ku,  
Tokyo 102-0073 Japan  
Tel. +81-33-556-2791  
Fax. +81-33-556-2790  
E-mail: [oj.optics@mksinst.com](mailto:oj.optics@mksinst.com)

#### AUSTRALIA AIS (Applied Infrared Sensing)

Level 1, 16-18 Carlotta street,  
Artmon, NSW 2064,  
Australia  
Tel. 1300-557-205 Australia  
Tel. 09-889-2477 New Zealand  
E-mail: [Dmitri.I@applied-infrared.com.au](mailto:Dmitri.I@applied-infrared.com.au)  
[www.ophiropt.com](http://www.ophiropt.com)