OPTICS FOR AUTOMOTIVE NIGHT-VISION AND ADVANCED DRIVER-ASSISTANCE SYSTEMS (ADAS)

supir 13.6mm f/1.0, athermalized Fixed Focus 680345

The largest automotive optical supplier

- High MTF
- High volume manufacturing
- Available for QVGA or VGA resolution at 10, 12,17, 25µm pitch
- Up to 75° HFOV

mks | Ophir®

Maximize night vision performance road safety with Ophir's night vision optics

Automotive night vision systems, using thermal imaging, allow drivers to detect pedestrians and retain a clear view of the road ahead, even when vision is obstructed by environmental conditions such as darkness, smoke, or fog. The introduction of these systems is part of the trend towards ADAS (Advanced Driver-Assistance Systems), with many major vehicle manufacturers investing billions of dollars into such systems. Such systems provide a range of features, including semi or fully autonomous driving, collision avoidance, and alert systems.

For maximum performance and minimal collision risk, thermal imaging night vision systems must achieve high accuracy, and allow for long distance object detection. These factors are critical in providing the driver with sufficient response time.

The key to meeting these requirements is the use of high sensitivity and high resolution optics – such as Ophir's athermalized lenses. Using innovative optical and mechanical designs, Ophir's lenses allow for full operation in all environmental conditions, while also featuring a compact size, and competitive costs.

Ophir has earned its reputation as a world-leading designer and supplier in the field of thermal imaging optics for the automotive market. Ophir's superior optics increase pedestrian recognition software performance, allowing a greater ability to anticipate potential hazards.

Crafted with years of experience, Ophir's IR thermal imaging lenses feature the highest quality components and materials, designed especially to meet the needs of the industry. As the largest automotive IR thermal optics supplier for the European automotive market, Ophir's lenses are integrated in the night visions systems of top European cars, with an installed base of hundreds of thousands of lenses.

Features and benefits

- Available for QVGA or VGA resolution at 10µm, 12µm, 17µm, 25µm pitch
- High MTF
- High volume manufacturing capacity with proven track record of 50,000 units annual production.
- Up to 75° HFOV

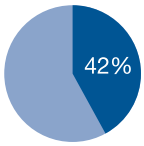
The necessity for Night Vision systems with thermal imaging

Standard vision systems, using visible-light cameras, rely on sunlight or street lighting, rendering them of limited use in low-lighting conditions.

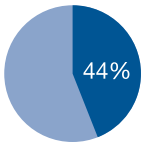
A recent study into Automatic Emergency Braking (AEB) systems highlights the necessity for thermal imaging cameras in vehicles equipped with ADAS. Performed by the AAA[1], the study found that AEB systems with pedestrian detection were completely ineffective at night. The four car models evaluated had radar and visible cameras, but not thermal imaging cameras. During the day, these vehicles were able to detect and avoid a proportion of collisions with adult pedestrians (~40% when the vehicle was travelling at 20mph). However, during the night, the AEB system failed to detect even one adult pedestrian, at any vehicle speed. Night vision systems with thermal imaging capabilities are clearly a necessity.

[1] https://newsroom.aaa.com/2019/10/aaa-warns-pedestrian-detection-systems-dont-work-when-needed-most

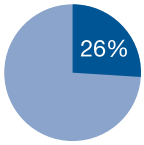
The impact of poor visibility conditions on road fatalities



Poor visibility is a factor in 42% of all traffic collisions[1].



About 44% of fatal collisions happened during night time in 2015, despite 60% less traffic than during the day[2].

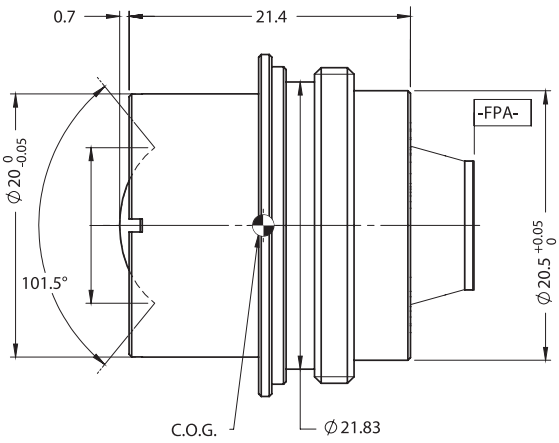


26% of road traffic deaths are among pedestrians and cyclists as they are the hardest to see in poor visibility[3].

[1] OECD, 2003: Road Safety Impact of New Technologies: Impact of New Technologies
[2] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812384
[3] http://www.who.int/violence_injury_prevention/road_safety_status/2015/magnitude_A4_web.pdf

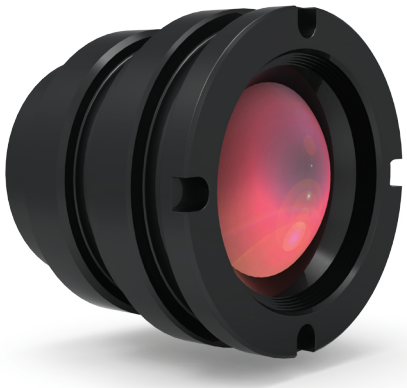
SupIR 6.2mm f/1.0, Manual Focus
680439

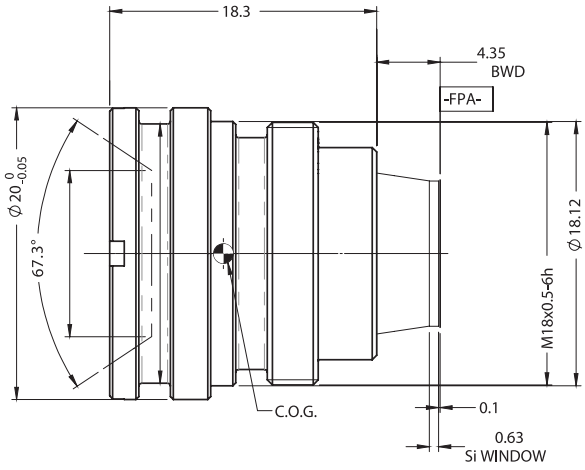
NEW



HFOV	160x120	320x240	384x288	640x512	1024x768
25µ	37.4°	78.6°	98.4°		
17µ	25.3°	51.5°	62.6°		
12µ	17.8°	35.9°	43.3°	75°	
10µ	14.8°	29.8°	35.9°	61.2°	107.3°

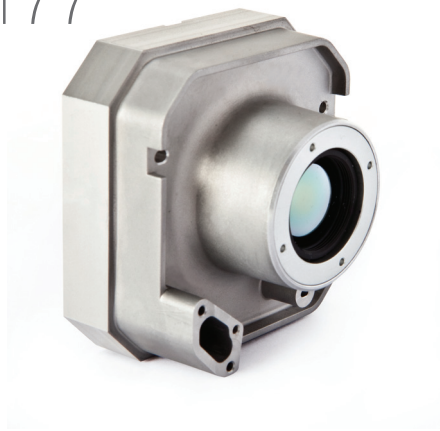
SupIR 9.2mm f/1.0, Fixed Athermalized
680407





HFOV	160x120	320x240	384x288	640x480	672x544	1024x768
25µ	25.2°	52.3°	65.1°			
17µ	17.0°	34.6°	41.9°	77.9°	84.8°	
12µ	12.0°	24.2°	29.1°	50.0°	52.8°	
10µ	10.0°	20.1°	24.2°	41.0°	43.2°	71.1°

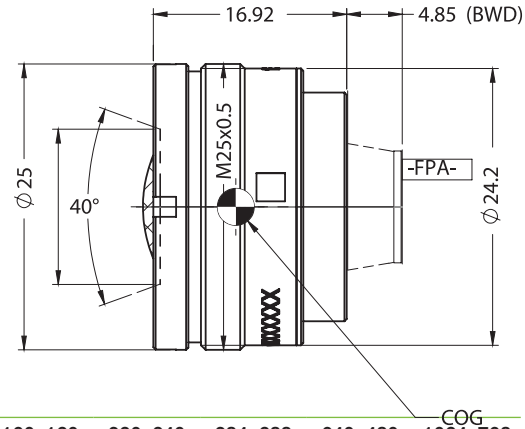
SupIR 12.7mm f/1.0, Fixed Athermalized 680177



HFOV	160x120	320x240	384x288	640x480	1024x768
25µ	18.0°	36.4°	43.9°	76.0°	
17µ	12.2°	24.6°	29.5°	50.0°	
12µ	8.6°	17.3°	20.8°	34.9°	56.8°

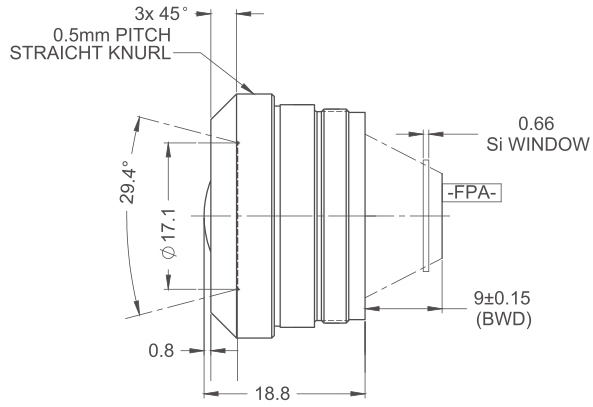
SupIR 13.6mm f/1.4, Fixed Athermalized 680345

NEW



HFOV	160x120	320x240	384x288	640x480	1024x768
25µ	16.8°	33.3°	39.9°		
17µ	11.4°	22.8°	27.2°	45.2°	
12µ	8.1°	19.3°	18.5°	31°	51.1°

SupIR 19mm f/1.1, Fixed Athermalized 65221



HFOV	160x120	320x240	384x288	640x480	1024x768
25µ	11.9°	23.6°	28.3°		
17µ	8.1°	16.1°	19.3°	32.1°	
12µ	5.7°	11.4°	13.7°	22.7°	36.3°

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 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, automotive and commercial applications: IR Components and complex lens assemblies with fixed or motorized focus and zoom lenses.

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