Shapeoptics

SHAPE OPTICS
TECHNOLOGIES PTE LTD

OPTICAL ENGINEERING

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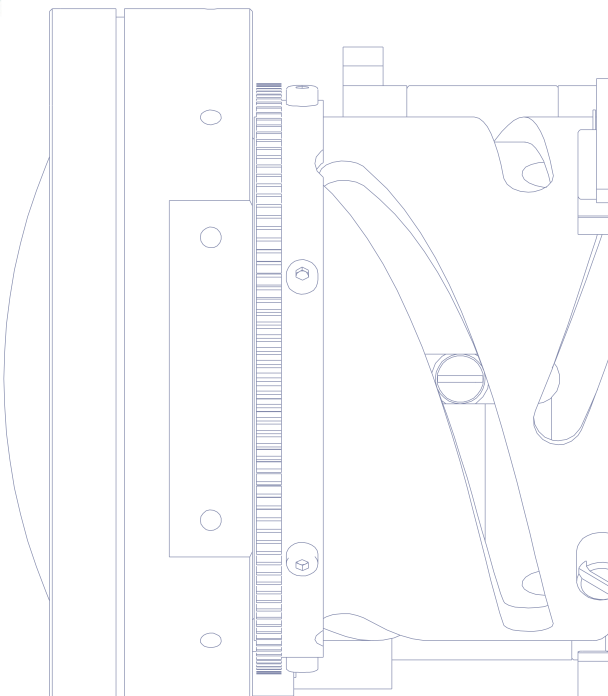
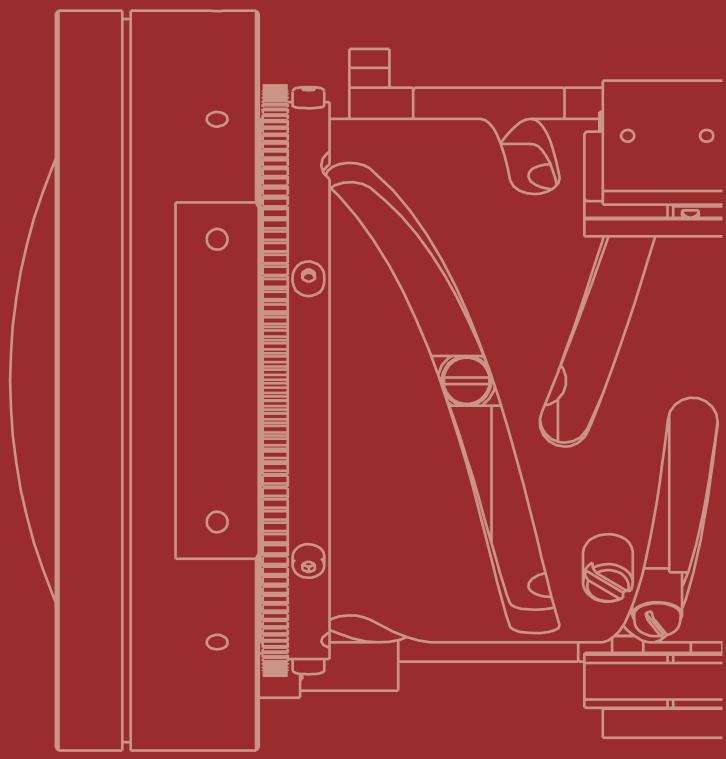


1. Infrared Lens

INFRARED LENS



1.1 Athermal Lenses: Sharp Focus in Any Temperature

Athermalized lenses are specifically engineered to maintain consistent optical performance even under varying temperature conditions. Unlike traditional lenses that are prone to shifting focal lengths and image distortion when exposed to temperature changes, athermalized lenses ensure stable performance, minimizing the effects of thermal expansion and contraction. This makes them ideal for high-precision applications that demand reliable focus regardless of environmental temperature fluctuations.

Key Features

- **Temperature Stability:** Designed to mitigate the effects of temperature variations, ensuring consistent focus and optical performance.
- **High Quality:** Manufactured using advanced materials and coatings to guarantee superior image quality across different wavelengths.
- **Wide Range of Models:** Available in various focal lengths and configurations to suit different optical system requirements.
- **Durability:** Built to withstand challenging environments, making them suitable for both industrial and scientific applications.

Available Models

Model	Focal Length (mm)	F-No.
SOTA0810-612	08	1
SOTA1010-612	10	1
SOTA1510-612	15	1
SOTA1910-8012	19	1
SOTA2510-617	25	1
SOTA2510-8012	25	1
SOTA3510-617	35	1
SOTA3512-612	35	1.2
SOTA4010-8012	40	1
SOTA4012-612	40	1.2
SOTA4511-8012	45	1.1
SOTA4512-617	45	1.2

Model	Focal Length (mm)	F-No.
SOTA5010-617	50	1
SOTA5011-617	50	1.1
SOTA5012-8012	50	1.2
SOTA5510-612	55	1
SOTA6010-612	60	1
SOTA6011-8012	60	1.1
SOTA6012-612	60	1.2
SOTA6012-8012	60	1.2
SOTA7512-617	75	1.2
SOTA7512-8012	75	1.2
SOTA9009-8012	90	0.9
SOTA9012-612	90	1.2

Application

Our athermalized optics are trusted across industries where precision is non-negotiable:

- **Thermal & Infrared Imaging:** Essential for IR systems where even slight temperature shifts can ruin data accuracy.
- **Advanced Surveillance:** Guarantees sharp security footage in outdoor environments subject to extreme day-night cycles.
- **Laser Systems:** Maintains beam consistency and accuracy in manufacturing and medical laser equipment.
- **Scientific Research:** Provides the high-level stability required for telescopes, microscopes, and laboratory sensors.

Rifle Scope

ADAS

Airbone

1.2 Uncooled Motorized Continuous Zoom Lens for Infrared Imaging

The Uncooled Motorized Continuous Zoom Lens is designed to provide exceptional optical performance with the ability to zoom continuously while maintaining sharp focus. These lenses are widely used in infrared imaging systems where temperature fluctuations are less of a concern, offering efficient performance in applications that do not require active cooling. The motorized zoom feature enables easy adjustments to the focal length without the need for manual intervention, making them ideal for dynamic environments.

These lenses are typically used in applications such as surveillance, security, industrial monitoring, and other scenarios where real-time adjustments to field of view (FOV) are crucial, and a compact, efficient solution is needed.

Key Features

- **Motorized Zoom:** Provides smooth zooming capabilities without manual focus adjustment, offering flexibility and convenience.
- **Compact Design:** These lenses are built for environments where space and weight are critical factors.
- **Uncooled:** No need for cooling systems, making the lenses suitable for applications where temperature control is not a concern.
- **High Resolution:** With pixel resolutions up to 1280×1024, these lenses ensure high-quality imaging.
- **Wide Focal Length Range:** Available in various focal length ranges, offering versatility for different imaging requirements.

Application

- **Surveillance & Security:** Used in security cameras for both indoor and outdoor monitoring.
- **Industrial Inspection:** Ideal for non-contact temperature measurement and visual inspection in industrial settings.
- **Automated Systems:** Perfect for robotics, automated monitoring, and AI-driven systems that require real-time adjustments to FOV.
- **Environmental Monitoring:** Effective for monitoring large areas or dynamic environments such as wildlife observation, search, and rescue missions.

Available Models

Model	FL Max (mm)	FL Min (mm)	F-No.	PX	PY	Pitch
SOTZE2575-617	75	25	0.9-1.2	640	512	17
SOTZE20120-612	120	20	0.8-1.1	640	512	12
SOTZE25100-617	100	25	0.9-1.1	640	512	17
SOTZE25150-612	150	25	1.1	640	512	12
SOTZE25225-612	225	25	1.35-1.37	640	512	12
SOTZE30150-617	150	30	0.7-1.2	640	512	17
SOTZE30150-8012	150	30	0.87-1.24	1280	1024	12
SOTZE30150F1-612	150	30	1	640	512	12
SOTZE30180-612	180	30	1.2	640	512	12
SOTZE30180-617	180	30	0.8-1.2	640	512	17

1.3 Motorized Focus Lens for Precise Imaging & Adjustments

The Motorized Focus Lens series provides exceptional precision and flexibility for infrared and optical imaging systems. Designed for applications requiring quick and accurate focus adjustments, these lenses come with motorized focus control, eliminating the need for manual intervention. This feature is ideal for dynamic environments where real-time adjustments are necessary. Whether you're working in industrial inspections, surveillance, or scientific applications, our motorized focus lenses provide a reliable, high-performance solution for maintaining sharp focus across a variety of focal lengths.

Key Features

- **Motorized Focus Control:** Allows for effortless, automatic focus adjustments without the need for manual intervention.
- **Wide Focal Length Range:** Available in various focal lengths, offering flexibility for different optical systems and imaging requirements.
- **Compact Design:** Optimized for use in both small and large optical systems, ensuring ease of integration.
- **High Pixel Resolution:** With a pixel resolution of 640×512, these lenses ensure high-quality imaging in a variety of applications.
- **Precise Performance:** Engineered for precision with a variety of aperture sizes (F-No.) to suit different needs.

Application

- **Surveillance Systems:** Ideal for security cameras and other monitoring systems where focus needs to be adjusted quickly and accurately.
- **Industrial Inspections:** Used in inspection systems where fine adjustments in focus are crucial for detailed inspections and measurements.
- **Scientific Research:** Suitable for applications requiring precise imaging, such as microscopy or other optical research areas.
- **Medical Imaging:** Used in diagnostic tools where clarity and focus adjustments are necessary for accurate results.

Available Models

Model	Focal Length (mm)	F-No.	PX	PY	Pitch
SOTEA4508-617	45	0.8	640	512	17
SOTEA5010-617	50	1.0	640	512	17
SOTEA5012-617	50	1.2	640	512	17
SOTEA6010-617	60	1.0	640	512	17
SOTEA6910-617	69	1.0	640	512	17
SOTEA7510-617	75	1.0	640	512	17
SOTEA9012-617	90	1.2	640	512	17
SOTEA10010-617	100	1.0	640	512	17

1.4 Long-wave Cooled Fixed-focus Lens for Precise Thermal Imaging

The Long-wave Cooled Fixed-focus Lens is designed to provide high-quality thermal imaging by focusing on the long-wave infrared (LWIR) spectrum. These lenses are specifically engineered for use in cooled infrared systems, where cooling is required to enhance the performance of infrared detectors. The fixed-focus design ensures that the lens is optimized for specific thermal imaging applications, delivering consistent and sharp focus over time. These lenses are perfect for use in environments where high sensitivity and precise temperature measurements are crucial, such as military, industrial, and scientific applications.

Key Features

- **Cooled Design:** Designed for use with cooled infrared detectors, providing enhanced sensitivity and image clarity.
- **Fixed Focus:** Optimized for fixed focal length applications, eliminating the need for complex adjustments.
- **High Resolution:** Pixel resolutions of 640×512 provide clear and sharp thermal imaging.
- **Durability:** Built to withstand challenging environments, ensuring reliability in harsh conditions.
- **Wide Focal Length Range:** Available in various focal lengths, providing versatility for different applications.

Application

- **Military & Defense:** Used in surveillance, target detection, and reconnaissance, where high-quality thermal images are essential for strategic operations.
- **Industrial Monitoring:** Ideal for equipment inspection, predictive maintenance, and monitoring temperature variations in critical industrial processes.
- **Scientific Research:** Used in thermal cameras for research requiring precise thermal imaging, such as environmental studies or material testing.
- **Search and Rescue:** Crucial for detecting heat signatures in search and rescue operations, even in low-visibility conditions.

Available Models

Model	Focal Length (mm)	F-No.	PX	PY	Pitch
SOTL50F2-615	50	2	640	512	15
SOTL100F2-615	100	2	640	512	15
SOTLA100F2-615	100	2	640	512	15
SOTL120F2-615	120	2	640	512	15

1.5 Medium-wave Cooled Fixed-focus Lens for Thermal Imaging

The Medium-wave Cooled Fixed-focus Lens is specifically designed for high-performance thermal imaging systems that operate within the medium-wave infrared (MWIR) spectrum. These lenses are engineered for use in cooled infrared systems, providing enhanced sensitivity and precision for capturing thermal data. With a fixed-focus design, these lenses ensure that your thermal imaging system delivers sharp and clear images without the need for complex adjustments. Ideal for a variety of applications, these lenses are optimized for industrial, military, and scientific uses where high resolution and consistent performance are critical.

Key Features

- **Cooled Design:** Optimized for use with cooled detectors to improve image quality and thermal sensitivity.
- **Fixed Focus:** Designed for fixed focal length applications, ensuring ease of use and reliable performance.
- **High Resolution:** Provides clear imaging with resolutions up to 1280×1024 for larger focal lengths.
- **Durability:** Built to withstand harsh environments and demanding applications, ensuring long-term reliability.
- **Wide Focal Length Range:** Available in multiple focal lengths, offering versatility for different imaging needs.

Application

- **Military & Defense:** Used in surveillance, reconnaissance, and targeting systems where clear and precise thermal imaging is essential.
- **Industrial Inspection:** Ideal for monitoring machinery, electrical components, and other systems where temperature variations need to be accurately detected.
- **Scientific Research:** Perfect for applications in material testing, environmental monitoring, and other research areas requiring high-quality thermal imaging.
- **Search and Rescue:** Provides clear thermal images in low-visibility environments, assisting in rescue missions to locate heat signatures.

Available Models

Model	Focal Length (mm)	F-No.	PX	PY	Pitch
SOTM25F2-615	25	2	640	512	15
SOTM30F4-615	30	4	640	512	15
SOTM50F2-615	50	2	640	512	15
SOTM50F4-615	50	4	640	512	15
SOTM100F2-615	100	2	640	512	15
SOTM100F2-8015	100	2	1280	1024	15
SOTM100F4-615	100	4	640	512	15

1.6 In-line Medium-wave Cooled Continuous Zoom Lens

The In-line Medium-wave Cooled Continuous Zoom Lens is designed to offer precise zooming capabilities in medium-wave infrared (MWIR) systems, especially those requiring high sensitivity and thermal imaging performance. These lenses are cooled for improved imaging quality, ensuring that your optical system performs optimally even under challenging conditions. Featuring a continuous zoom range, these lenses allow users to adjust the field of view (FOV) smoothly and accurately without losing focus, making them ideal for dynamic environments and real-time applications.

These lenses are suitable for a variety of fields, from defense and surveillance to industrial applications, providing versatility and high-performance imaging in the medium-wave infrared range.

Key Features

- **Continuous Zoom:** Provides smooth and precise zoom functionality, allowing for seamless adjustment of focal length while maintaining image clarity.
- **Cooled Design:** Built for use with cooled detectors, enhancing the sensitivity and clarity of thermal imaging systems.
- **High Resolution:** With pixel resolutions of 640×512, these lenses ensure clear, high-quality images, even at longer focal lengths.
- **Versatile Focal Length Range:** Offers a broad zoom range, from wide-angle views to detailed long-distance imaging, with flexible focal length options.
- **Compact and Durable:** Designed to withstand harsh conditions while maintaining consistent performance.

Application

- **Military & Defense:** Used in surveillance, reconnaissance, and targeting systems, where both wide-angle and zoomed-in views are necessary for tactical operations.
- **Industrial Inspection:** Ideal for inspecting machinery, electrical equipment, and other industrial systems where both close-up and broad thermal imaging are required.
- **Search and Rescue:** Helps locate individuals or heat sources in low-visibility conditions, perfect for rescue operations in challenging environments.
- **Environmental Monitoring:** Useful for monitoring temperature variations in large areas, such as forests, wildlife tracking, and disaster areas.

Available Models

Model	FL Max (mm)	FL Min (mm)	F-No.	PX	PY	Pitch
SOTZ15300F4-615	300	15	4	640	512	15
SOTZ15330F4-615	330	15	4	640	512	15
SOTZ18275F55-615	275	18	5.5	640	512	15
SOTZ20200F4-615	200	20	4	640	512	15
SOTZ23450F4-615	450	22.5	4	640	512	15
SOTZ23450F4-615-B	450	22.5	4	640	512	15
SOTZ30030F2-615	300	30	2	640	512	15
SOTZ30600F4-615	600	30	4	640	512	15
SOTZ38750F4-615	750	37.5	4	640	512	15
SOTZ39500F4-615	900	35	4	640	512	15
SOTZ40220F4-615	220	40	4	640	512	15
SOTZ45900F4-615	900	45	4	640	512	15
SOTZ90100F4-615	1000	90	4	640	512	15

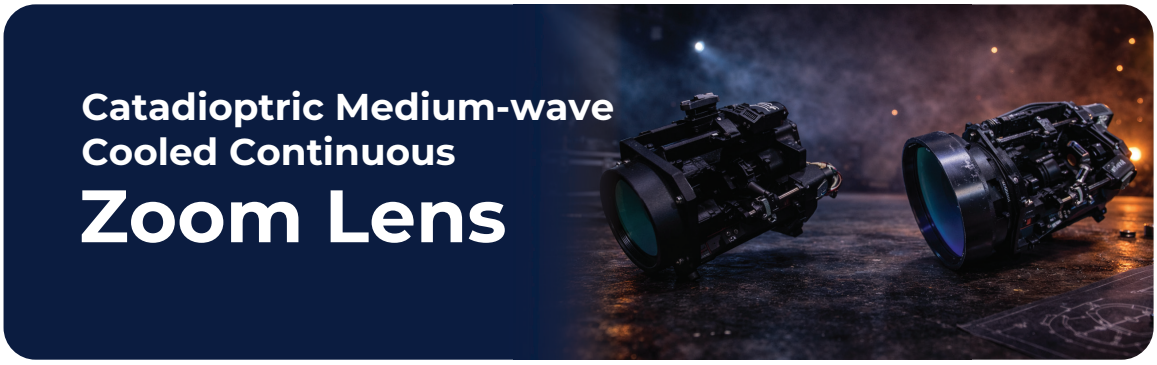
1.7 Catadioptric Medium-wave Cooled Continuous Zoom Lens

The Catadioptric Medium-wave Cooled Continuous Zoom Lens combines both reflective (mirror) and refractive (lens) elements to offer a compact, high-performance solution for medium-wave infrared (MWIR) imaging systems. These lenses are specially designed to maintain image quality while providing continuous zoom capabilities, enabling users to dynamically adjust the field of view. The cooling system enhances the thermal sensitivity and clarity of the lens, making it ideal for high-performance applications in various challenging environments.

With a robust design and exceptional optical characteristics, these lenses are perfect for a wide range of thermal imaging needs, from military surveillance to industrial inspections and scientific research.

Key Features

- **Catadioptric Design:** Combines mirror and lens elements for compactness and high optical performance.
- **Continuous Zoom:** Allows smooth and accurate zoom adjustments, providing versatility in a wide range of imaging applications.
- **Cooled Optics:** Optimized for use with cooled infrared detectors, improving sensitivity and thermal imaging performance.
- **High Resolution:** Pixel resolutions of 640×512 ensure clear and detailed thermal images.
- **Durability:** Designed to withstand harsh environments, ensuring reliable operation over long periods.



Application

- **Military & Defense:** Ideal for surveillance, reconnaissance, and targeting systems where both wide-angle and zoomed-in views are essential for strategic operations.
- **Industrial Inspection:** Used for monitoring industrial systems, machinery, and electrical components, detecting temperature variations with high accuracy.
- **Scientific Research:** Suitable for applications requiring precise thermal imaging, such as environmental studies or material testing.
- **Search and Rescue:** Perfect for locating heat signatures in low-visibility conditions during rescue missions.

Available Models

Model	FL Max (mm)	FL Min (mm)	F-No.	PX	PY	Pitch
SOTZF15300F4-615L	300	15	4	640	512	15
SOTZF15300F4-615S	300	15	4	640	512	15
SOTZF20420F4-615S	420	20	4	640	512	15
SOTZF20500F55-615	500	20	5.5	640	512	15
SOTZF20550F55-615	550	20	5.5	640	512	15
SOTZF23500F4-615L	500	23	4	640	512	15
SOTZF23500F4-615S	500	23	4	640	512	15
SOTZF23700F4-615L	700	23	4	640	512	15
SOTZF25600F4-615L	600	25	4	640	512	15
SOTZF30200F2-615S	200	30	2	640	512	15
SOTZF50200F2-615S	200	50	2	640	512	15

1.8 Scanning Dual-field-of-view Lens for Versatile Imaging

The Scanning Dual-field-of-view Lens is designed to provide dynamic switching between two different fields of view (FOV) without the need to change lenses. This innovative design allows the lens to seamlessly transition between a wide-angle view and a zoomed-in view, making it ideal for applications where both broad coverage and detailed observation are needed. This lens is used in systems that require flexible and real-time adjustments to their FOV, such as in surveillance, monitoring, and security systems.

These lenses combine advanced optical design with high performance, ensuring that your system can handle a variety of tasks without compromising on image quality. Whether you need to capture a wide area or zoom in for precise analysis, our dual-field-of-view lenses provide the flexibility and clarity you need.

Key Features

- **Dual-Field-of-View:** Allows users to easily switch between wide-angle and zoomed-in views, enhancing the lens' versatility.
- **High Resolution:** Pixel resolution of 640×512 ensures crisp, clear imaging for both wide and zoomed views.
- **Dynamic Scanning:** Ideal for applications that require dynamic FOV adjustments without losing focus or image quality.
- **Compact and Durable:** Designed for robust use in various environments, offering reliability in both high-performance and challenging conditions.

Application

- **Surveillance and Security:** Useful in cameras that require switching between a wide-area scan and detailed inspection for security monitoring.
- **Military and Defense:** Employed in reconnaissance and monitoring systems, offering flexibility to capture both broad landscapes and specific targets.
- **Industrial Inspection:** Ideal for industrial cameras that need to switch between inspecting large systems and zooming in on specific components.
- **Search and Rescue:** Enhances the ability to search large areas and zoom in on specific heat sources during rescue operations.

Available Models

Model	FL Max (mm)	FL Min (mm)	F-No.	PX	PY	Pitch
SOTSDF80200F2-615	200	80	2	640	512	15
SOTSDF300600F4-615	600	300	4	640	512	15

1.9 Catadioptric Collimator for Precise Optical Alignment

The Catadioptric Collimator is a precision optical component that combines both reflective (mirror) and refractive (lens) elements to produce a parallel beam of light. It is widely used in optical systems where collimated light is needed for precise measurements and analysis. The catadioptric design offers enhanced performance by reducing optical aberrations and improving efficiency, making it ideal for high-precision applications. This collimator ensures the parallelization of light beams, which is crucial for a range of optical testing, alignment, and calibration applications.

Key Features

- **Catadioptric Design:** Uses both mirrors and lenses to improve optical performance and reduce aberrations.
- **High Precision:** Delivers accurate collimation with minimal distortion, ensuring consistent results in optical systems.
- **Wide Field of View:** The lens offers a large field of view (≥1.2°), making it suitable for broader applications.
- **Temperature Range:** Designed to operate effectively within a range of 10°C to 30°C, making it suitable for various environmental conditions.
- **Clear Aperture:** Offers a clear aperture of 350 mm, providing efficient light throughput.

Application

- **Optical Testing and Calibration:** Essential in testing optical systems where parallel light is required, such as in laser alignment and sensor calibration.
- **Laser Systems:** Used in laser collimation for ensuring a focused and parallel beam for optical experiments.
- **Imaging Systems:** Ideal for collimating light in imaging systems that require precise control over beam quality and direction.
- **Aerospace and Defense:** Used in optical testing for aerospace applications, ensuring accurate measurements and alignments.

Available Models

Model	Focal Length (mm)	Clear Aperture (mm)	Field of View	Operating Environment
SOTPTGG-3	3000 ± 5%	350	2ω ≥ 1.2°	10°C ~ 30°C

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