



Your customized  
infrared optics expert



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# Rising Optics



[www.risingoptic.com](http://www.risingoptic.com)



## | Your one-stop IR Optics solution

Rising Optics is a specialist in optics design and manufacturing. Our one-stop solution for addressing complex challenges in various applications has gained recognition from customers worldwide.



## We customize

### | The Ultimate Infrared Optics Solution

Rising Optics specializes in delivering professional infrared optical solutions, including SWIR, MWIR, and LWIR lenses. From single field-of-view (FOV) lenses to fast-switching double FOV and continuous zooming infrared lenses, we provide professional IR lens solutions to cater to applications in defense, security, commercial, industrial, and laboratory applications.



## Why choose us

### | Unlocking Quality and Affordability

At Rising Optics, our dedicated R&D team and advanced equipment set us apart. With ISO9001-2005 certification, we offer a full spectrum of optics solutions, from initial development to high-volume production. Expect outstanding quality and competitive pricing as our commitment to you.



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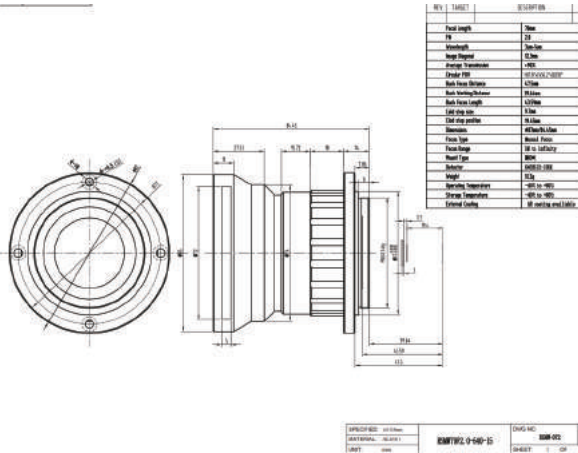




# DESIGN

Seamlessly translates concepts from drawings to production

- Strong R&D foundation
- IR lens design and integration
- Personalized solutions to meet your specific needs.



# Optical Machining

Professional IR lens optical machining expertise

- With DTM Nanoform X Lathe by AMTTEK Precitech
- Guarantees top-notch, high-precision IR lenses



# Testing

Precision and quality are our top priorities.

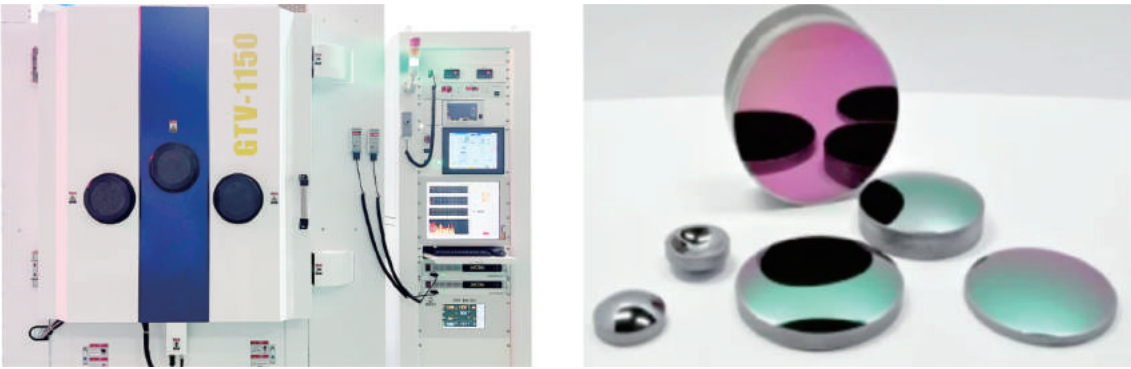
- Meticulously scrutinize every phase of production
- Cutting-edge international standard equipment: M112-5288 by Taylor Hobson and polishing machine KJSC-2.0/4P by Kwang Jin.



# Coating

Mature coating process ensures product quality

- High end coating machine



# Assembling

Seamless Integration of components

- For superior infrared optics solutions across applications.



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## 1 LWIR Lens | Infrared Optics

LWIR Lenses normally work with Uncooled detectors the range of 8-14μm wavelength. Rising LWIR lenses support up-to 1280x1024(SXGA) resolution.

### Application



Rifle scope



ADAS(for car)



Airbone

### 1.1 Athermalized Lens

Athermalized lenses maintain consistent focus over a broad temperature range. Applied in Uncooled thermal imaging cameras for security&surveillance, air-bone and other setting.



| Focal length | F#  | Detector                     | Circular FOV                                         |
|--------------|-----|------------------------------|------------------------------------------------------|
| 3.85mm       | 1.0 | 160x120-17um                 | (H)38.9°x(V)29.6°(D)47.6°                            |
| 4.1mm        | 1.2 | 640x512-12um                 | (H)100°x(V)82°X(D)126°                               |
| 5mm          | 1.2 | 160x120-17um                 | (H)25.5°x(V)20°X(D)31.5°                             |
| 5.8mm        | 1.2 | 640x512-12um                 | (H)80°x(V)62°X(D)108°                                |
| 6mm          | 1.1 | 256x192-12um<br>160x120-17um | (H)29.8°x(V)22.3°X(D)38°<br>(H)25.5°x(V)20°X(D)31.5° |
| 6.9mm        | 1.0 | 640x512-17um                 | (H)90°x(V)70°X(D)110.4°                              |
| 7.5mm        | 1.0 | 320x240-12um                 | (H)28.7°x(V)21.7°X(D)35.4°                           |
|              | 1.2 | 640x512-12um                 | (H)58.4°x(V)46.8°X(D)74.6°                           |
| 8.5mm        | 1.2 | 640x512-17um                 | (H)65.2°x(V)51.2°                                    |
| 8.7mm        | 1.0 | 640x512-12um                 | (H)50.8°x(V)40.6°X(D)69.8°                           |
| 9mm          | 1   | 384x288-17um                 | (H)39.8°x(V)30.4°                                    |
| 9.1mm        | 1.2 | 640x512-12um                 | (H)48°x(V)38°X(D)62°                                 |
| 10.3mm       | 1   | 640x512-17um                 | (H)60°x(V)47.7°X(D)77°                               |
| 12.3mm       | 1.0 | 384x288-25um                 | (H)42°x(V)32°                                        |

LWIR

MWIR

SWIR

NwIR

|        |      |                                              |                                                                          |
|--------|------|----------------------------------------------|--------------------------------------------------------------------------|
| 13mm   | 1.2  | 160x120-17um                                 | (H)39.6°x(V)31.6°x(D)50.5°                                               |
|        | 1.0  | 640x512-12um<br>160x120-17um                 | (H)45°x(V)37°x(D)56°                                                     |
| 13.5mm | 1.0  | 640x512-12um                                 | (H)31.7°x(V)25.6°                                                        |
| 15mm   | 1    | 256x192-12um160x120-17um                     | (H)39°x(V)32°x(D)50°                                                     |
| 17.8mm | 1.0  | 640x512-17um                                 | (H)30°x(V)27.6°x(D)44°                                                   |
| 18mm   | 1    | 640x512-12um                                 | (H)24°x(V)19.3°x(D)30.5°                                                 |
| 19mm   | 1.0  | 384x288-17um                                 | (H)14°x(V)10.4°x(D)17.4°                                                 |
|        | 1.2  | 640x512-12um                                 | (H)22.8°x(V)18.4°x(D)29.4°                                               |
| 20mm   | 1    | 640x512-17um                                 | (H)31°x(V)24.6°x(D)38.9°                                                 |
| 24mm   | 1.0  | 640x512-12um                                 | (H)18°x(V)14.5°x(D)23°                                                   |
| 25mm   | 1.0  | 1280x1024-12um                               | (H)34.1°x(V)27.6°x(D)42.9°                                               |
|        |      | 640x512-17um                                 | (H)24.5°x(V)19.7°x(D)31.1°                                               |
| 35mm   | 1.0  | 640x512-12um                                 | (H)12.5°x(V)10°x(D)15.9°                                                 |
|        |      | 640x512-17um                                 | (H)17.7°x(V)14°x(D)22°                                                   |
| 40mm   | 1.0  | 640x512-12um                                 | (H)10.8°x(V)8.7°x(D)13.9°                                                |
|        |      | 640x480-17um                                 | (H)15.5°x(V)11.6°x(D)19.3°                                               |
| 50mm   | 0.85 | 640x480-17um                                 | (H)12.4°x(V)9.3°x(D)15.6°                                                |
|        | 1.0  | 640x480-12um                                 | (H)8.8°x(V)6.6°x(D)11°                                                   |
|        |      | 640x480-17um<br>640x512-17um                 | (H)12.4°x(V)9.3°x(D)15.5°                                                |
| 52mm   | 1.0  | 640x512-12um                                 | (H)8.4°x(V)6.7°x(D)10.8°                                                 |
| 60mm   | 1.25 | 640x512-12um                                 | (H)7.2°x(V)5.8°x(D)9.2°                                                  |
| 75mm   | 1.0  | 640x512-17um                                 | (H)6.2°x(V)4.9°x(D)7.9°                                                  |
|        | 1.2  | 640x512-12um<br>640x480-17um<br>384x288-17um | (H)5.9°x(V)4.7°x(D)7.5°<br>(H)8°x(V)6°x(D)10.3°<br>(H)5°x(V)3.8°x(D)6.3° |
| 100mm  | 1.2  | 384x288-12um                                 | (H)2.6°x(V)2°x(D)3.3°                                                    |
|        |      | 640x512-12um                                 | (H)4.4°x(V)3.5°x(D)5.6°                                                  |
|        |      | 640x512-17um                                 | (H)6.2°x(V)4.9°x(D)7.9°                                                  |
| 110mm  | 1.3  | 640x512-17um                                 | (H)5.6°x(V)4.5°x(D)7.2°                                                  |

1.2 Manual Focus Lens

Manual focus IR lenses enable precise control over focal distance, offering flexibility and accuracy for infrared imaging in various applications.



| Focal length | F#  | Detector                                                        | Circular FOV                                                |
|--------------|-----|-----------------------------------------------------------------|-------------------------------------------------------------|
| 7.5mm        | 1.0 | 640x480-17um<br>384x288-17um                                    | (H)71.9°x(V)57°x(D)84.4°                                    |
| 11mm         | 1.0 | 640x480-17um<br>384x288-17um                                    | (H)52°x(V)40°x(D)63°                                        |
| 15mm         | 1.0 | 640x480-17um<br>384x288-17um                                    | (H)39.8°x(V)30.4°x(D)48.8°                                  |
| 19mm         | 1.0 | 640x480-17um                                                    | (H)32°x(V)24°x(D)39°                                        |
| 25mm         | 1.0 | 640x480-17um                                                    | (H)24.5°x(V)18.5°x(D)30.4°                                  |
|              | 1.0 | 2048x1536-17um                                                  | (H)69.7°x(V)55.1°x(D)82°                                    |
| 28mm         | 1.0 | 1024x768-12um                                                   | 24.75°x18.69°                                               |
| 30mm         | 1.0 | 640x480-17um                                                    | (H)20.5°x(V)15.4°x(D)25.5°                                  |
| 35mm         | 1.0 | 640x512-12um                                                    | (H)12.5°x(V)10°x(D)16°                                      |
|              | 1.0 | 640x480-17um                                                    | (H)17.7°x(V)13.3°x(D)22°                                    |
| 50mm         | 1.0 | 640x512-12um<br>640x480-17um                                    | (H)8.8°x(V)7°x(D)11.3°<br>(H)12.4°x(V)9.3°x(D)15.5°         |
|              | 0.8 | 1024x768-17um                                                   | (H)19.7°x(V)14.8°x(D)24.5°                                  |
|              | 1.0 | 640x480-17um                                                    | (H)8.9°x(V)6.6°x(D)11°                                      |
| 60mm         | 1.0 | 640x480-17um                                                    | (H)10.3°x(V)7.7°x(D)12.9°                                   |
| 70mm         | 1.0 | 640x512-12um                                                    | 6.28°x5.03°                                                 |
|              | 1.2 | 1280x1024-12um<br>1024x768-12um<br>640x512-17um<br>640x512-12um | 12.52°x10.03°<br>11.69°x8.78°<br>8.89°x7.12°<br>6.28°x5.03° |
| 72mm         | 1.1 | 640x512-12um                                                    | 6.11°x4.89°                                                 |
| 75mm         | 1.0 | 1024x768-17um                                                   | 13.24°x9.95°                                                |
|              | 1.1 | 640x512-12um                                                    | 5.86°x4.69°                                                 |
| 85mm         | 1.1 | 640x512-17um                                                    | 7.32°x5.86°                                                 |



|       |     |                                               |                                           |
|-------|-----|-----------------------------------------------|-------------------------------------------|
| 100mm | 1.0 | 640x512-17um<br>640x512-12um                  | 6.23°x4.98°<br>4.4°x3.52°                 |
|       | 1.2 | 1024x768-12um<br>640x512-17um<br>640x512-12um | 7.03°x5.28°<br>6.23°x4.98°<br>4.4°x3.52°  |
| 150mm | 1.2 | 1024x768-12um<br>640x512-17um<br>640x512-12um | 4.69°x3.52°<br>4.15°x3.32°<br>2.93°x2.35° |
| 170mm | 1.0 | 1024x768-12um                                 | 4.14°x3.11°                               |

### 1.3 Thermal Sight Lens

Sophisticated optical and mechanical design ensures sharp and rugged image quality, even in the face of strong shocks or changes.



| Focal length | F#  | Detector                                                     | Circular FOV               |
|--------------|-----|--------------------------------------------------------------|----------------------------|
| 13.5mm       | 1.1 | 640x512-24um                                                 | 71.7°x55.3°                |
| 19mm         | 1.1 | 640x512-17um                                                 | (H)33°x(V)26°X(D)41.6°     |
| 25mm         | 1   | 640x512-17um                                                 | (H)24.5°x(V)18.5°X(D)30.4° |
|              | 1.1 | 640x512-17um                                                 | (H)24.5°x(V)18.5°X(D)30.4° |
| 35mm         | 1.1 | 384x288-17um                                                 | (H)10.6°x(V)8°X(D)13.2°    |
|              | 1.0 | 384x288-17um                                                 | (H)12.5°x(V)10°X(D)16°     |
|              | 1.0 | 640x512-12um                                                 | (H)12.5°x(V)10°            |
| 38mm         | 1.3 | 640x480-17um 384x288-17um                                    | (H)16°x(V)12°X(D)20°       |
| 50mm         | 1.1 | 384x288-17um                                                 | (H)7.4°x(V)5.6°X(D)9.3°    |
|              | 1.0 | 384x288-17um<br>384x288-12um<br>640x512-12um<br>640x480-17um | (H)8.8°x(V)7°X(D)11.2°     |
|              |     |                                                              | 12.4° (H)x10°(V)X15.8°(D)  |
|              |     |                                                              | 12.4° (H)x10°(V)X15.8°(D)  |
|              |     |                                                              | (H)12.4°x(V)9.3°X(D)15.4°  |
|              | 1.2 | 640x512-17um                                                 | (H)12.4°x(V)9.3°X(D)15.5°  |
| 75mm         | 1   | 640x512-12um                                                 | (H)5.9°x(V)4.7°X(D)7.5°    |
|              | 1   | 640x480-17um                                                 | (H)8.2°x(V)6.2°X(D)10.3°   |
|              | 1.3 | 640x512-17um                                                 | (H)8.2°x(V)6.2°X(D)10.3°   |
| 100mm        | 1.3 | 640x512-17um                                                 | (H)6.2°x(V)5°X(D)8°        |

### 1.4 Fish lens

Mainly used in gun sight, temperature measurement medical, monitoring and other fields



| Focal length | F#  | Detector       | Circular FOV   |
|--------------|-----|----------------|----------------|
| 4mm          | 1.2 | 640x480-17um   | 142°x110°X168° |
| 4.4mm        | 1   | 800x600-17um   | 180°x136°X236° |
| 4.6mm        | 1   | 640x480-17um   | 142°x101°X178° |
| 5.6mm        | 1   | 800x600-17um   | 140°x110°X180° |
|              | 1.2 | 1280x1024-12um | 155°x122°      |
| 7.2mm        | 1   | 800x600-17um   | 110°x80°X136°  |

### 1.5 Continuous Zoom Lens

Rising continuous zoom lens achieves equilibrium between performance and cost, supporting resolutions up to 1280x1024-12um.



| Focal length | F#        | Detector                                                        | Circular FOV                                                                                                    |
|--------------|-----------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 12-50mm      | 0.95-1.2  | 640x512-12um                                                    | 37.37°x29.69°~8.66°x6.97°                                                                                       |
| 12-60mm      | 0.85-1.2  | 640x512-12um                                                    | 35.49°x28.72°~7.32°x5.86°                                                                                       |
| 15-150mm     | 0.77-1.2  | 640x512-17um                                                    | 39.87°x32.36°~4.15°x3.32°                                                                                       |
| 20-100mm     | 0.77-1.1  | 640x512-12um                                                    | 21.74°x17.46°~4.40°x3.52°                                                                                       |
|              | 1.2       | 384x288-17um<br>640x480-17um                                    | 18.5°x14°~31°x24.9°<br>3.7°x2.8°~6.2°x5°                                                                        |
| 20mm~105mm   | 0.82-1.14 | 640x512-17um                                                    | 30.43°x24.55° 5.93°x4.75°                                                                                       |
| 20-120mm     | 0.8-1.1   | 640x512-12um                                                    | 3.67°x2.93°~21.74°x17.46°                                                                                       |
| 22.9-100mm   | 0.82-1.05 | 1024x768-12um<br>640x512-17um<br>640x512-12um                   | 30.04°x22.75°~7.03°x5.28°<br>26.73x21.52°~6.23°x4.98°<br>19.04°x15.28°~4.4°x3.52°                               |
|              |           |                                                                 |                                                                                                                 |
| 22.9-90mm    | 0.82-1.14 | 1024x768-12um                                                   | 30.04°x22.75°~7.81°x5.86°                                                                                       |
|              | 0.8-1.1   | 640x512-17um                                                    | 24.5°x19.75° 6.23°x4.98°                                                                                        |
| 25-100mm     | 0.95-1.15 | 1280×1024-12um<br>1024×768-12um<br>640x512-17um<br>640x512-12um | 34.15°x27.61°~8.78°x7.03°<br>27.61°x20.89°~7.03°x5.28°<br>24.55°x19.75°~6.23°x4.98°<br>17.46°x14.01°~4.4°x3.52° |
|              |           |                                                                 |                                                                                                                 |
|              |           |                                                                 |                                                                                                                 |
|              |           |                                                                 |                                                                                                                 |

## 1.6 Dual-FOV Lens

Rising Dual-FOV technology enhances imaging versatility by offering two optional fields of view, enabling precision and adaptability in various applications.



| Focal length | F#       | Detector                                      | Circular FOV                                                                         |
|--------------|----------|-----------------------------------------------|--------------------------------------------------------------------------------------|
| 120/40mm     | 1.2/0.9  | 640X512-17um                                  | 5.19°x4.15°/15.49°x12.42°                                                            |
| 20/60mm      | 1.0/1.2  | 640x512-12um                                  | 21.74°x17.46°/7.32°x5.86°                                                            |
| 25/70mm      | 0.95/1.1 | 1024X768-12um<br>640X512-17um<br>640X512-12um | 21.61°x20.89°/10.03°x7.53°<br>24.55°x19.75°/8.89°x7.12°<br>17.46°x14.01°/6.28°x5.03° |
| 25/75mm      | 0.8/1.0  | 640X512-17um<br>640X512-12um                  | 24.55°x19.75°/8.3°x6.64°<br>17.46°x14.01°/5.86°x4.69°                                |
|              | 1/1.2    | 640X512-17um                                  | 24.55°x19.75°/6.92°x5.54°                                                            |
| 29.2/88mm    | 0.88/1.0 | 640X512-12um                                  | 14.98°x12.01°/5°x4°                                                                  |
| 40/150mm     | 1.0/1.2  | 1024X768-12um<br>640X512-17um<br>640X512-12um | 17.46°x13.14°/14.69°x3.52°<br>15.49°x12.42°/4.15°x3.32°<br>10.97°x8.78°/2.93°x2.35°  |
| 44/132mm     | 1.0/1.1  | 640X512-17um                                  | 14.1°x11.3°/4.72°x3.78°                                                              |
| 50/150mm     | 1.0/1.2  | 640X512-12um                                  | 8.78°x7.03°/2.93°x2.35°                                                              |
|              | 0.9/1.2  | 640X512-17um<br>640X512-12um                  | 10.36°x8.3°/3.46°x2.77°<br>7.32°x5.86°/2.44°x1.96°                                   |
| 65/20mm      | 1.2/0.9  | 640x512-17um                                  | 10.36°x8.3°/24.55°x19.75°                                                            |

|            |           |                                                                 |                                                                                                                  |
|------------|-----------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 25mm-225mm | 1.5       | 640x480-17um                                                    | 14.8°x11.1°<br>24.5°x19.7°<br>1.6°x1.2°<br>2.7°x2.2°                                                             |
| 25mm-225mm | 0.92-1.3  | 640x512-17um                                                    | 24.55°x19.75°<br>2.77°x2.22°                                                                                     |
| 25mm-225mm | 0.92-1.3  | 640x512-17um<br>640x512-12um                                    | 24.55°x19.75°~2.77°x2.22°<br>17.46°x14.01°~1.96°x1.56°                                                           |
| 25mm-75mm  | 0.97-1.23 | 640x480-12um<br>512-12um                                        | 33.4°x10.7°<br>24.8°x8.1°                                                                                        |
| 25-100mm   | 1.2       | 640x512-17um<br>640x512-12um                                    | 25°x20°x31°<br>8.3°x6.6°x10.6°                                                                                   |
|            | 0.84-1.14 | 640x512-12um                                                    | 17.46°x14.01°~4.4°x3.52°                                                                                         |
|            | 0.95-1.15 | 1280X1024-12um<br>1024X768-12um<br>640X512-17um<br>640X512-12um | 34.15°x27.61°~8.78°x7.03°<br>27.61°x20.89°~7.03°x5.28°<br>24.55°x19.75°~6.23°x4.98°<br>17.46°x14.01°~4.4°x3.52°  |
| 25-225mm   | 0.92-1.3  | 640X512-17um<br>640X512-12um                                    | 24.55°x19.75°~2.77°x2.22°<br>17.46°x14.01°~1.96°x1.56°                                                           |
| 25-75mm    | 0.99-1.14 | 1280x1024-12um<br>1024x768-12um<br>640x512-17um<br>640x512-12um | 34.15°x27.61°~11.69°x9.37°<br>27.61°x20.89°~9.37°x7.03°<br>24.55°x19.75°~8.3°x6.64°<br>17.46°x14.01°~5.86°x4.69° |
| 30mm-150mm | 0.85-1.2  | 640x480-17um                                                    | 12.4°x9.3°<br>20.5°x15.5°<br>2.5°x1.8°<br>4.1°x3.1°                                                              |
| 30-120mm   | 0.9-1.2   | 640X512-17um<br>640X512-12um                                    | 20.56°x16.51°~5.19°x4.15°<br>14.59°x11.69°~3.67°x2.93°                                                           |
|            | 0.8-1.0   | 640x512-17um                                                    | 20.56°x16.51°~4.15°x3.32°                                                                                        |
| 30-180mm   | 0.8-1.2   | 640x512-17um                                                    | 20.56°x16.51°~3.46°x2.77°                                                                                        |
|            | 0.91-1.18 | 1280x1024-12um<br>1024x768-12um<br>640x512-17um<br>640X512-12um | 28.72°x23.15°~4.89°x3.91°<br>23.15°x17.46°~3.91°x2.93°<br>20.56°x16.51°~3.46°x2.77°<br>14.59°x11.69°~2.44°x1.96° |
| 40-120mm   | 0.9-1.14  | 1024x768-12um                                                   | 20.32°x13.53°~6.84°x5.13°                                                                                        |
| 56-300mm   | 1.0-1.4   | 1024x768-12um<br>640x512-17um<br>640X512-12um                   | 12.52°x9.41°~2.35°x1.76°<br>11.1°x8.89°~2.08°x1.66°<br>7.85°x6.28°~1.47°x1.77°                                   |

1.7 Motorized lens

Rising offers LWIR motorized focus lenses from EFL 25mm to 170mm for surveillance &homeland security, defense, and related remote control systems.



| Focal length | F#  | Detector                                      | Circular FOV                              |
|--------------|-----|-----------------------------------------------|-------------------------------------------|
| 25mm         | 1   | 640x480-17um<br>384x288-17um                  | (H)24.5°x(V)18.5°X(D)30.4°                |
| 28mm         | 1   | 1024x768-12um                                 | 24.75°x18.69°                             |
| 50mm         | 1   | 640x512-17um                                  | (H)12.4°x(V)9.3°X(D)15.4°                 |
| 70mm         | 1   | 640x512-12um                                  | 6.28°x5.03°                               |
|              | 1.2 | 1280x1024-12um                                | 12.52°x10.03°                             |
|              |     | 1024x768-12um                                 | 11.69°x8.78°                              |
|              |     | 640x512-17um<br>640x512-12um                  | 8.89°x7.12°<br>6.28°x5.03°                |
| 72mm         | 1.1 | 640x512-12um                                  | 6.11°x4.89°                               |
| 75mm         | 1   | 1024x768-17um                                 | 13.24°x9.95°                              |
| 85mm         | 1.1 | 640x512-17um                                  | 7.32°x5.86°                               |
| 100mm        | 1   | 640x512-17um<br>640x512-12um                  | 6.23°x4.98°<br>4.4°x3.52°                 |
|              | 1.2 | 1024x768-12um<br>640x512-17um<br>640x512-12um | 7.03°x5.28°<br>6.23°x4.98°<br>4.4°x3.52°  |
|              | 1   | 640x512-17um                                  | (H)6.2°x(V)5°                             |
| 150mm        | 1.2 | 1024x768-12um<br>640x512-17um<br>640x512-12um | 4.69°x3.52°<br>4.15°x3.32°<br>2.93°x2.35° |
|              | 1   | 1024x768-12um                                 | 4.14°x3.11°                               |
| 170mm        | 1   | 1024x768-12um                                 |                                           |

2 MWIR Lens | Infrared Optics

Middle wave length (MWIR) thermal lenses capture infrared radiation in the 3-5μm range, offering precise temperature measurement and image clarity for various applications, from gas detection,industrial testing, spectral testing,etc

Application



Gas leaking detection

2.1 Cooled Athermalized Infrared Lens

Providing sharp image (maintains focus) thru-zoom bore-sight accurately,compatible with main MWIR detectors(IDDCA), support up to HD 1280x1024 15μm format high resolution.



| Focal length | F#  | Detector     | Circular FOV  |
|--------------|-----|--------------|---------------|
| 25MM         | 2   | 640x512-25UM | 21.74°x17.46° |
| 25MM         | 2   | 640x512-25UM | 21.74°x17.46° |
| 75MM         | 1.2 | 640x512-25UM | 12.18°x9.75°  |



2.2 Cooled Continuous Zoom Lens

The MWIR (Mid-Wave Infrared) cooled continuous zoom lens represents an advanced breakthrough, delivering precise and versatile thermal imaging capabilities for various applications with its seamless zoom functionality.



| Focal length | F#       | Detector       | Circular FOV              |
|--------------|----------|----------------|---------------------------|
| 15-300mm     | 4.0      | 640x512-15um   | 35.49°x28.72°~1.83°x1.47° |
|              | 5.5      | 640x512-15um   | 36.49°x28.72°~1.83°x1.47° |
| 15-400mm     | 4.0      | 640x512-15um   | 35.49°x28.72°~1.83°x1.47° |
| 18-275mm     | 5.5      | 640x512-15um   | 29.86°x24.09°~2°x1.6°     |
| 18-360mm     | 4.0      | 640x512-15um   | 29.86°x24.09°~1.53°x1.22° |
| 18-430mm     | 5.5      | 640x512-15um   | 29.86°x24.09°~1.28°x1.02° |
| 20-420mm     | 4.0      | 640x512-17um   | 27°x21.74°~1.31°x1.05°    |
|              | 4.0      | 640x512-15um   | 27.00°x21.74°~1.31°x1.05° |
| 21-700mm     | 5.5(LEO) | 640x512-15um   | 25.75°x20.72°~0.79°x0.63° |
| 22-450mm     | 5.5      | 640x512-15um   | 24.62°x19.8°~1.22°x0.98°  |
| 22.5-500mm   | 4.0      | 640x512-15um   | 24.09°x19.37°~1.1°x0.88°  |
| 22.5-700mm   | 5.5      | 640x512-15um   | 24.00°x19.30°~0.79°x0.63° |
| 22.58-458mm  | 5.5(LEO) | 640x512-15um   | 24.00°x19.30°~1.20°x0.96° |
| 22.58-500mm  | 5.5      | 640x512-15um   | 24.00°x19.30°~1.1°x0.88°  |
| 22.58-700mm  | 4.0      | 640x512-15um   | 24.00°x19.30°~0.79°x0.63° |
| 25-250mm     | 4.0      | 640x512-15um   | 27.74°x17.46°~2.2°x1.76°  |
| 25-600mm     | 4.0      | 640x512-15um   | 27.74°x17.46°~0.92°x0.73° |
| 30-300mm     | 4.0      | 320x256-30um   | 18.1°x14.5°~1.8°x1.4°     |
|              |          | 640x512-15um   | 36.2°x29°~3.6°x2.8°       |
|              |          | 640x512-15um   |                           |
| 30-460mm     | 5.5      | 640x512-15um   | 18.18°x14.59°~1.2°x0.96°  |
| 30-500mm     | 4.0      | 640x512-15um   | 18.18°x14.59°~1.1°x0.88°  |
| 32-800mm     | 4.0      | 640x512-15um   | 17.06°x13.69°~0.69°x0.55° |
| 30-240mm     | 4.0      | 640x512-15um   | 18.18°x14.59°~2.29°x1.83° |
| 32-800mm     | 5.5(LEO) | 640x512-15um   | 17.06°x13.69°~0.69°x0.55° |
| 35-690mm     | 4.0      | 640x512-15um   | 15.62°x12.52°~0.8°x0.64°  |
| 36.4-1100mm  | 5.5      | 640x512-15um   | 15°x12°~0.5°x0.4°         |
| 40-1000mm    | 4.0      | 1280x1024-10um | 18.18°x14.59°~0.73°x0.58° |
| 50-300mm     | 5.5      | 640x512-15um   | 10.97°x8.78°~1.83°x1.47°  |
| 50-330mm     | 4.0      | 640x512-15um   | 10.97°x8.78°~1.67°x1.33°  |

2.3 MWIR Manual Focus Len

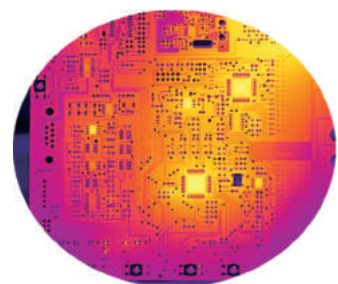
The MWIR (Mid-Wave Infrared) cooled manual focus lens embodies efficiency and adaptability, offering precise thermal imaging capabilities. Its manual focus feature provides users with fine control for enhanced versatility.



| Wavelength | Focal length | F#  | Detector                     | Circular FOV                       |
|------------|--------------|-----|------------------------------|------------------------------------|
| 3.8-4.6um  | 13mm         | 2.0 | 640x512-15um                 | 40.53°x32.91°                      |
|            | 19mm         | 2.0 | 640x512-15um                 | 28.36°x22.85°                      |
|            | 25mm         | 2.0 | 640x512-15um                 |                                    |
|            | 50mm         | 2.0 | 640x512-15um                 | 10.97°x8.78°                       |
|            |              | 4.0 | 1280x1024-15um               | 21.7°x 17.4°X 27.6°                |
|            | 55.84mm      | 0.6 | 640x512-25um                 | ±0.5°                              |
|            | 70mm         | 2.0 | 640x512-15um                 | 7.8°x 6.2°X 10°                    |
|            | 75mm         | 2.0 | 640x512-15um                 | 7.32°x5.86°                        |
|            | 100mm        | 2.0 | 1280x1024-15um               | 10.97°x8.78°                       |
|            |              |     | 640x512-15um<br>640x512-24um | 5.5°x 4.4°X 7°<br>8.78°x 7°X 11.2° |
| 1.5-5um    | 200mm        | 2.0 | 640x512-15um                 | 2.1°x 2.1°X 3.5°                   |
|            | 25mm         | 3.0 | 1024x768-17um                | 38°x 29°X 47°                      |
|            | 50mm         | 2.3 | 1024x768-17um                | 19.7°x 14.8°X 24.5°                |
| 3-5um      | 100mm        | 2.3 | 1024x768-17um                | 10°x 7.4°X 12.4°                   |
|            | 25mm         | 2.0 | 640x512-15um                 | (H)21.7°x(V)12.5°X(D)24.6°         |
|            | 50mm         | 2   | 640x512-15um                 | (H)10.9°x(V)8.7°X(D)14°            |
|            |              | 4   | 1280x1024-15um               | (H)21.7°x(V)17.4°X(D)27.6°         |
|            | 70mm         | 2.0 | 640x512-15um                 | (H)7.8°x(V)6.2°X(D)10°             |
|            | 100mm        | 2.0 | 640x512-15um                 | (H)5.5°x(V)4.4°X(D)7°              |
|            | 200mm        | 2.0 | 640x512-15um                 | (H)2.1°x(V)2.1°X(D)3.5°            |
|            | 100mm        | 2.0 | 640x512-24um                 | (H)8.78°x(V)7°X(D)11.2°            |

### 3 SWIR Lens | Infrared Optics

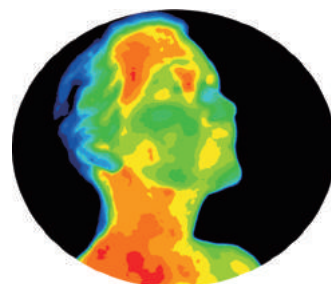
Shortwave thermal lenses, operating in the 1-3 $\mu$ m infrared spectrum, provide exceptional sensitivity and resolution for detecting heat anomalies in demanding applications like scientific research, industrial inspection and agriculture.



Semiconductor inspection



Industrial Monitor

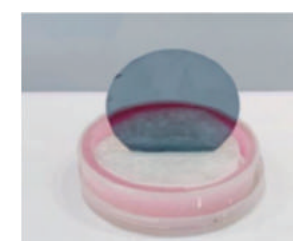


Medical inspection

| Wavelength      | Focal length | F#  | Detector           | Circular FOV             |
|-----------------|--------------|-----|--------------------|--------------------------|
| 0.9-1.7 $\mu$ m | 50mm         | 1.4 | 640x480-25 $\mu$ m | (H)18°x(V)13°X(D)22°     |
|                 | 75mm         | 1.5 | 640x480-25 $\mu$ m | (H)12°x(V)9°X(D)15°      |
|                 | 100mm        | 2   | 640x480-25 $\mu$ m | (H)9°x(V)6.8°X(D)11.4°   |
|                 | 200mm        | 2.4 | 640x480-25 $\mu$ m | (H)4.5°x(V)3.6°X(D)5.8°  |
| 0.9-2.5 $\mu$ m | 25mm         | 2.5 | 320x256-30 $\mu$ m | (H)21°x(V)17°X(D)27°     |
|                 | 35mm         | 2   | 320x256-30 $\mu$ m | (H)15.6°x(V)12.5°X(D)20° |
|                 | 50mm         | 2   | 320x256-30 $\mu$ m | (H)10.8°x(V)8.7°X(D)14°  |

### 4 NWIR Lens | Infrared Optics

Near-Infrared (NIR) lenses operate in the 0.75-1.4 $\mu$ m wavelength range, bridging the gap between visible light and infrared. They are widely used for applications like surveillance, medical imaging, agriculture, and quality control, providing enhanced contrast and penetration capabilities for various tasks requiring imaging beyond the visible spectrum.



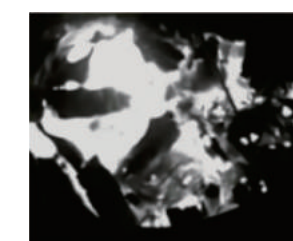
Visible



SWIR



Visible



SWIR

| Wavelength | Focal length | F#  | Detector              | FOV      |
|------------|--------------|-----|-----------------------|----------|
| 900-1700nm | 12mm         | 1.4 | CCD-12.5 $\mu$ m      | 37°(D)   |
|            | 17mm         | 2   | 6000X4000-3.9 $\mu$ m | 79.2°(D) |
|            | 21mm         | 1.8 | 640X480-25 $\mu$ m    | 52°(D)   |
|            | 25mm         | 1.4 | 640X480-25 $\mu$ m    | 44.6°(D) |
|            | 50mm         | 1.4 | 640X480-25 $\mu$ m    | 22.6°(D) |
|            | 75mm         | 1.4 | 640X480-25 $\mu$ m    | 15.2°(D) |
|            | 100mm        | 2   | 640X480-25 $\mu$ m    | 11.4°(D) |
|            | 200mm        | 2   | 640X480-25 $\mu$ m    | 5.7°(D)  |