

# METRIC ZOOM

## Metric Zoom High Resolution Ultra-Long Range Surveillance / Imaging Lens

This Ultra-Long Range Surveillance lens provides continuous motorized zoom for tracking objects at a distance from .7km to over 100km. Ideal for weapons testing, shuttle tracking, and missile tracking, our Metric Zoom has the ability to image high speed events and conditions at locations that are far removed from the observer. Accurately imaging a moving target under changing conditions requires either multiple imaging systems with fixed focal lengths or a zoom lens system that is capable of changing its magnification to accommodate the variation in object distance. Our Metric zoom system offers significant advantages in that it eliminates the need for multiple imaging systems, the costly task of changing fixed imaging systems during operations, and thereby reduces the costs and logistics of carrying multiple surveillance systems in inventory.

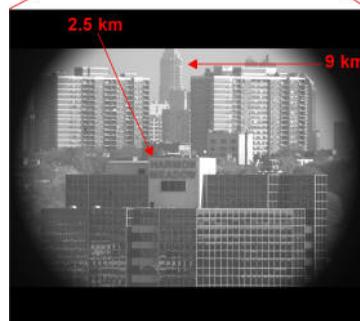


### “Precision Metric Zoom Lens” from the U.S. Army White Sands Missile Range. (Phase I & Phase II )

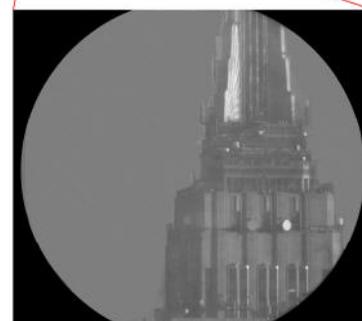
Developed for the Army’s White Sands Missile Range, this precision zoom lens consists of 16 refractive elements with three stationary lens groups and two moving lens groups. Using optical compensation, the focus and zoom are simultaneously maintained for focal lengths from 750 mm (f/4) to 3800 mm (f/14) at a resolution of 100 line pairs/mm (lp/mm) and an image field of 24 mm. The throughput of the lens is ~85%, and the lens is optimized over the visible wave-band (485 nm to 650 nm). The zoom lens images objects at distances from 0.7 km to 100 km and is thermally compensated over a temperature range of 20 °F to 120 °F. Optical assembly was accomplished in about a week.



New York City Skyline from Hotel in Secaucus, NJ (handheld camera)



Secaucus, NJ (foreground) and New York City (background) (f = 1000 mm)



Empire State Building 8.9 km (f = 3600 mm)