

### Features

- Narrow, medium, and wide fields of view
- Athermalized design
- Rugged construction
- Broadband anti-reflective coatings
- Integral sunshade and baffling minimize stray light and lens flare
- Custom optics design services available
- Motorized focus and zoom available custom

### FOV Comparison



Narrow FOV



Wide FOV

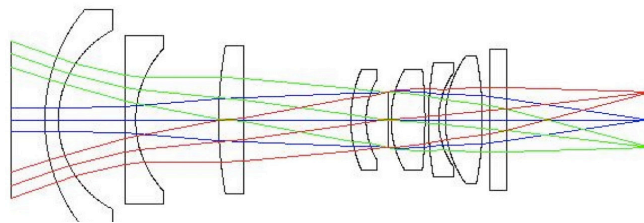
### ECAM Optics

#### Standard and Custom Options

Three standard lens options are available for the ECAM series visible-band cameras, providing narrow, medium, and wide fields of view. ECAM optics are designed for the rigors of space flight, utilizing proven design and manufacturing methodologies with decades of heritage across more than a dozen missions. Our standard lens options have no moving parts, are athermalized to provide stable performance over a wide range of temperatures, and are built to withstand the hazards of launch and long-term operation in orbit.

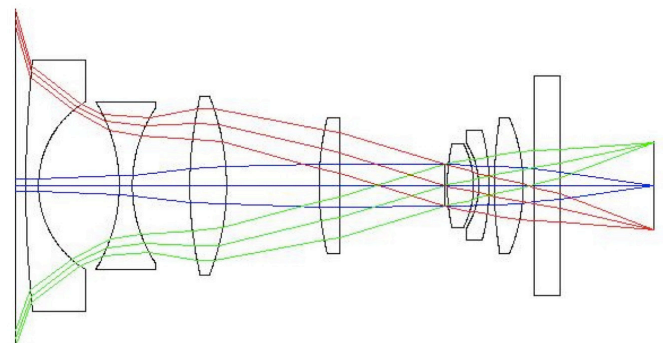


ECAM-NFOV

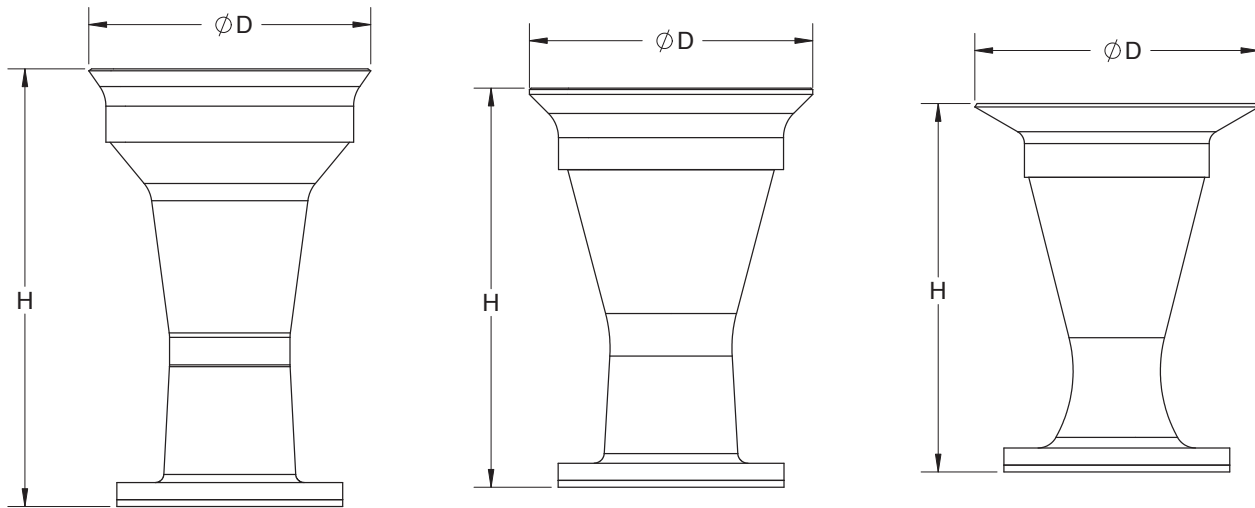


ECAM-NFOV  
Ray Trace  
Diagram

ECAM-WFOV  
Ray Trace  
Diagram



For missions with highly-tailored instrument requirements, MSSS provides custom optical design and manufacturing services. MSSS develops custom optics with fields-of-view from 15 to 180 degrees using standard refractive optics, with longer focal lengths supported using catadioptric and reflective telescopic optics. Additional capabilities for custom optical systems include motorized focus adjustment and zoom lenses.



#### MSSS FACTS

Headquarters: **San Diego**  
 Type: **Small Business**  
 Quality: **ISO9001:2008  
Compliant**  
 DUNS Number: **62-680-9032**  
 CAGE Code: **OR9V5**  
 NAICS Codes: 333316, 336419,  
 541512, 541690, 541712, 927110

Version: 20130506  
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Parameter	ECAM-NFOV	ECAM-MFOV	ECAM-WFOV
Mass	100 g	95 g	90 g
Dimensions	56 mm (D) x 86 mm (H)	57 mm (D) x 75 mm (H)	56 mm (D) x 69 mm (H)
Wavelength Range	400-700 nm	400-700 nm	400-700 nm
Effective Focal Length	12.6 mm	7.1 mm	4.7 mm
Focal Ratio	f/3.5	f/3.5	f/3.5
Horizontal FOV, C30	29 degrees	50 degrees	88 degrees
Vertical FOV, C30	22 degrees	38 degrees	63 degrees
Horizontal FOV, C50	25 degrees	44 degrees	77 degrees
Vertical FOV, C50	19 degrees	33 degrees	55 degrees
Radiation Dose	5 years (GEO)		
Recommended Operating Temp.	-55°C to 60°C		