

# HYPERSPPECTRAL OBJECTIVE LENSES

SPECIM provides high quality objective lenses, optimized to produce uniform and sharp images in the broad spectral ranges covered by hyperspectral imaging systems. All the lenses employ broadband AR coatings to minimize straylight and flare. Build quality is solid with durable metal construction and no plastic parts. Lens focus adjustment is lockable to prevent accidental changes in harsh environments. These prime lenses cover the focal lengths from wide to moderate telephoto with F-numbers matching our spectral cameras.

## VNIR 400 - 1000 nm

OPTICAL CHARACTERISTICS				
Fore lens	OLEWide **	OLE18	OLE23	OLE140
Focal length	9 mm	18 mm	23 mm	140 mm
F-number (fixed)	2.4	2.4	2.4	2.8
Spatial image size (max)	14.4 mm	12.4 mm	14.4 mm	12.4 mm
Spectral range	Corrected for the full 400 - 1000 nm range Multilayer AR -coated for 400 - 1000 nm			
Optical output	Telecentric			
RMS Spot diameter *	14.8 μm	17.4 μm	15.4 μm	10 μm
Transmission	> 85%			
Minimum working distance	50 cm (30 cm)			10 m
MECHANICAL CHARACTERISTICS				
Dimensions	(L) 49 x diam. 47 mm	(L) 48 x diam. 53 mm	(L) 43 x diam. 41 mm	(L) 162 x diam. 65 mm
Body	Anonized aluminium			
Mount	Standard C-mount			

\* Average over image and all wavelengths.

\*\* In this wide field-of-view lens the pixel size on the target increases towards the edges of the field of view due to spatial distortion, and thus the actual focal length depends on the spatial image size (detector size) used. On request SPECIM provides calibration file for the distortion in order to correct it in image processing.

For more information please contact SPECIM.



OLEWide fore lens



OLE18 fore lens



OLE23 fore lens

## NIR 900 - 1700 nm and SWIR 900 - 2500 nm

OPTICAL CHARACTERISTICS						
Fore lens	OLES9 ***	OLES15	OLES22	OLES30	OLES56	OLESMacro
Focal length	9 mm	15 mm	22.5 mm	30.7 mm	56 mm	73.3 mm **
F-number (fixed)	2.0	2.1	2.0	2.0	2.0	4.0
Spatial image size (max)	12.8 mm	9.6 mm	12.8 mm	12.8 mm	9.6 mm	10.0 mm
Spectral range	Corrected for the full 900 - 2500nm range Multilayer AR -coated for 900 - 2500 nm					
Optical output	Telecentric					
RMS Spot diameter *	16.3 µm	10.1 µm	17.6 µm	16.8 µm	12.9 µm	25.4 µm
Transmission	> 82%					
Minimum working distance	50cm (30 cm)					10 cm
MECHANICAL CHARACTERISTICS						
Dimensions	(L) 94.3 x diam. 45 mm	(L) 60 x diam. 45 mm	(L) 48.5 x diam. 47 mm	(L) 41.6 x diam. 53 mm	(L) 84 x diam. 53 mm	(L) 173 x diam. 46 mm
Body	Anonized aluminium					
Mount	Proprietary mount		Standard C-mount	Proprietary mount		

\* Average over image and all wavelengths.

\*\* OLESMacro images the target in 1:1 ratio to the camera pixel size.

\*\*\* In this wide field-of-view lens the pixel size on the target increases towards the edges of the field of view due to spatial distortion, and thus the actual focal length depends on the spatial image size (detector size) used. On request SPECIM provides calibration file for the distortion in order to correct it in image processing.



OLES30 fore lens



OLES22 fore lens



OLESMacro

## MWIR 3000 - 5000 nm and LWIR 8000 - 12000 nm

OPTICAL CHARACTERISTICS					
Fore lens	OLEM23	OLEM43	OLEL32	OLEL41	OLEL43
Focal length	23.4 mm	43 mm	31.9 mm	41.3 mm	43 mm
F-number (fixed)	3.0	3.8	3.7	2.5	3.8
Spatial image size	19.5 mm	18.3 mm	18.4 mm	24 mm	18.4 mm
Spectral range	Corrected and multilayer AR-coated for the full 3 000 - 5 000 nm		Corrected and multilayer AR-coated for the full 8 000 - 12 000 nm		
RMS Spot diameter *	11.5 µm **	19.0 µm	30 µm **	37 µm	34,5 µm **
Transmission	> 94%				
Minimum working distance	50 cm (30 cm)				
MECHANICAL CHARACTERISTICS					
Dimensions	(L) 30 x diam. 28 mm	(L) 50 x diam. 33 mm	(L) 52 x diam. 42 mm	(L) 46 x diam. 46 mm	(L) 50 x diam. 33 mm
Body	Stainless steel/anonized aluminium				
Mount	Proprietary mount				



OLEL43 fore lens

\* Average over image and all wavelengths.

\*\* Diffraction limited.