

EDMUND OPTICS® PLAN APO & REFLX™ OBJECTIVES

Our objectives are made to the highest quality and standards, utilizing a strain-free optical system. They maintain a long working distance and offer high numerical apertures. With resolving power from 5 to 0.34 microns, our objectives work for a wide array of applications. All stated magnifications are based on a tube lens focal length of 200mm. Mounting thread is 26mm x 0.706mm pitch (36TPI). Works with all Mitutoyo parts and can be placed directly in a system currently utilizing Mitutoyo objectives.



- High Quality Optics in a Plan Apochromat Design
- Long Working Distance Options
- Sub-Micron Resolving Power

EO PLAN APO AND PLAN APO ULWD SERIES

	Plan APO 2X	Plan APO 5X	Plan APO 10X	Plan APO 20X	Plan APO 50X	Plan APO 100X	Plan APO ULWD 50X	Plan APO ULWD 100X
Numerical Aperture, NA:	0.055	0.14	0.28	0.42	0.55	0.8	0.42	0.55
Working Distance, WD (mm):	34	34	33.5	20	13	3	20.5	13
Focal Length (mm):	100	40	20	10	4	2	4	2
Resolving Power (µm):	5	2	1	0.7	0.5	0.34	0.7	0.5
Depth of Focus (µm):	91	14	3.58	1.6	0.9	0.43	1.6	0.9
Field of View - Dia. (mm):								
 Eyepiece, 24 Dia. field:	12	4.8	2.4	1.2	0.48	0.24	0.48	0.24
 $\frac{2}{3}$" Sensor (H x V):	4.4 x 3.3	1.76 x 1.32	0.88 x 0.66	0.44 x 0.33	0.176 x 0.132	0.088 x 0.066	0.176 x 0.132	0.088 x 0.066
 $\frac{1}{2}$" Sensor (H x V):	3.2 x 2.4	1.28 x 0.96	0.64 x 0.48	0.32 x 0.24	0.064 x 0.048	0.256 x 0.192	0.064 x 0.048	0.064 x 0.048
Stock Number	#59-875	#59-876	#59-877	#59-878	#59-879	#59-880	#59-881	#59-882

Edmund Optics® ReflX™ objectives are available in two configurations: infinity-corrected for focusing applications and finite conjugate for imaging applications. The infinity-corrected objectives may also be used for imaging applications when used with a 200mm secondary tube lens. The finite conjugate versions feature a standard 160mm back tube length, and may be used interchangeably with common DIN objectives.

Our High Performance (HP) ReflX™ is built on the same design as our original but with a $\frac{1}{4}\lambda$ peak-to-valley (P-V) transmitted wavefront and a tapered mechanical design, which permits use at angles of incidence (AOI) up to 45°. Customization available.



- Long Working Distance, High NA
- Ultra-Wide Spectral Band with No Chromatic Aberration
- Infinite and Finite Conjugate Designs
- Specially Treated to Reduce Stray Light

ReflX™ Objectives	DUV Enhanced Al Aluminum (R>88%, 190nm – 11µm)	UV Enhanced Al Aluminum (R>85%, 200 – 700nm)	Protected Gold (R>94%, 700nm – 11µm)
15X ReflX™, Infinite Conjugate	#59-315	#58-417	#58-418
15X ReflX™, Finite Conjugate	#59-316	#58-421	#58-422
15X HP ReflX™, Infinite Conjugate	#59-884	#59-886	#59-888
15X HP ReflX™, Finite Conjugate	#59-885	#59-887	#59-889

Numerical Aperture, NA:	0.28
Working Distance WD (mm):	23.6
Focal Length (mm):	13.3
Entrance Pupil Diameter (mm):	8.5
Small Mirror Diameter (mm):	8.8
Mounting:	RMS
Field of View (mm):	
$\frac{2}{3}$ " Sensor (H x V):	0.59 x 0.44
$\frac{1}{2}$ " Sensor (H x V):	0.43 x 0.32
Obscuration:	27%
Transmitted Wavefront:	ReflX™ $\frac{1}{10}\lambda$ (RMS) HP ReflX™ $\frac{1}{4}\lambda$ (P-V)

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MITUTOYO NIR, NUV, & UV OBJECTIVES



Mitutoyo's NIR, NUV, and UV infinity-corrected long working distance objectives combine the benefits of the standard M Plan Apo and M Plan Apo SL series objectives with enhanced spectral ranges. The NIR objectives are corrected from 480 to 1800nm, making them ideal for semiconductor and telecommunication inspection, or for laser cutting with common Nd:YAG lasers. The HR series offers an increased numerical aperture, providing smaller spot sizes and higher resolution.

- Ideal for Bright Field Imaging in UV, Visible, and NIR Spectral Regions
- Excellent Performance at Nd:YAG Laser Lines
- Broad Spectral Ranges

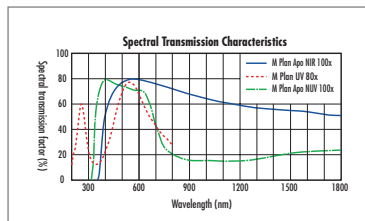
M PLAN APO NIR AND NIR HR SERIES (CORRECTED FROM 480NM TO 1800NM)

	NIR 5X	NIR 10X	NIR 20X	NIR 50X	NIR 100X	NIR HR 50X	NIR HR 100X
Numerical Aperture, NA:	0.14	0.26	0.40	0.42	0.50	0.65	0.70
Working Dist., WD (mm):	37.5	30.5	20.0	17.0	12.0	10.0	10.0
Focal Length (mm):	40.0	20.0	10.0	4.0	2.0	4.0	2.0
Resolution Power (µm):	2.0	1.1	0.7	0.7	0.6	0.42	0.39
Depth of Focus (µm):	14.0	4.1	1.7	1.6	1.1	0.65	0.56
Field of View: (mm):							
Eyepiece, 24 Dia. Field:	4.8	2.4	1.2	0.48	0.24	0.48	0.24
3/8" Sensor (HxV):	1.8 x 1.32	0.88 x 0.66	0.44 x 0.33	0.18 x 0.13	0.09 x 0.07	0.18 x 0.13	0.09 x 0.07
1/2" Sensor (HxV):	1.28 x 0.96	0.64 x 0.48	0.32 x 0.24	0.13 x 0.10	0.06 x 0.05	0.13 x 0.10	0.06 x 0.05
Stock Number	#46-402	#46-403	#46-404	#46-405	#46-406	#56-982	#56-983

M PLAN APO NUV SERIES (CORRECTED FROM 355NM TO 620NM) AND UV SERIES (CORRECTED FROM 266NM TO 500NM)

	NUV 20X	NUV 50X	NUV 100X	UV 20X	UV 50X	UV 80X
Numerical Aperture, NA:	0.40	0.42	0.50	0.36	0.40	0.55
Working Dist., WD (mm):	17.0	15.0	11.0	15.0	12.0	10.0
Focal Length (mm):	10.0	4.0	2.0	10.0	4.0	2.5
Resolution Power (µm):	0.7	0.7	0.6	0.8	0.7	0.5
Depth of Focus (µm):	1.7	1.6	1.1	2.1	1.7	0.9
Field of View: (mm):						
Eyepiece, 24 Dia. Field:	1.2	0.48	0.24	1.2	0.48	0.30
3/8" Sensor (HxV):	0.44 x 0.33	0.18 x 0.13	0.09 x 0.07	0.44 x 0.33	0.18 x 0.13	0.11 x 0.08
1/2" Sensor (HxV):	0.32 x 0.24	0.13 x 0.10	0.06 x 0.05	0.32 x 0.24	0.13 x 0.10	0.08 x 0.06
Stock Number	#46-407	#46-408	#46-409	#56-320	#56-321	#56-322

- High Quality Apochromat Design
- Flat Image Surface Over Entire Field of View
- Good Color Reproducibility



M PLAN APO SL SERIES (SUPER LONG WORKING DISTANCE) AND HR SERIES (HIGH RESOLUTION)

	Apo SL 20X	Apo SL 50X	Apo SL 80X	Apo SL 100X	Apo SL 200X	Apo HR 10X	Apo HR 50X	Apo HR 100X
Numerical Aperture, NA:	0.28	0.42	0.5	0.55	0.62	0.42	0.75	0.90
Working Dist., WD (mm):	30.5	20.5	15.0	13.0	13.0	15.0	5.2	1.3
Focal Length (mm):	10	4	2.5	2	1	20.0	4.0	2.0
Resolution Power (µm):	1.0	0.7	0.6	0.5	0.4	0.6	0.3	0.3
Depth of Focus (µm):	3.5	1.6	1.1	0.9	0.7	1.55	0.5	0.3
Field of View: (mm):								
Eyepiece, 24 Dia. Field:	1.2	0.48	0.30	0.24	0.12	2.4	0.48	0.24
3/8" Sensor (H x V):	0.44 x 0.33	0.18 x 0.13	0.11 x 0.08	0.09 x 0.07	0.04 x 0.034	0.88 x 0.66	0.18 x 0.13	0.09 x 0.07
1/2" Sensor (H x V):	0.32 x 0.24	0.13 x 0.10	0.08 x 0.06	0.06 x 0.05	0.03 x 0.025	0.64 x 0.48	0.13 x 0.10	0.06 x 0.05
Stock Number	#46-398	#46-399	#46-400	#46-401	#56-072	#58-236	#58-237	#58-238

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