



# Microscopes

## product datasheet

### **ML5000 Biological Microscopes**

The high quality and dependability of the ML Series with the added advantage of an ergonomic reversed quintuple nosepiece for mounting extra objectives. An optional 50W illuminator is also available in this series.

The ML5000 series encompasses 12 standard configurations listed below.

#### **VIEWING HEADS**

Available with standard binocular heads or trinocular heads for photomicrography, 30° inclined eyetubes with adjustable diopter settings and interpupillary distance, 360° rotatable.

#### **EYEPIECES**

Paired DIN KHW10x with 20mm field of view.

#### **OBJECTIVE CHANGER**

Smooth-operating, ball bearing mounted, reverse-angle, quintuple nosepiece.

#### **OBJECTIVES**

S. Flat Achromats, SM Planachromats, Planachromats, and Phase Contrast.

#### **STAGE**

Flat-top stage: 171mm x 140mm surface with 80mm (X) by 52mm (Y) movement, graduated with vernier readings to 0.1 mm, detachable specimen guide, drop-down right of left-handed controls.

#### **CONDENSERS**

Standard models have either an Achromatic NA 1.25 condenser with iris diaphragm and filter tray for brightfield work, simple NA 1.25 slider phase condenser, or an NA 1.25 Zernike phase condenser with filter tray and independently centerable annuli for phase contrast. Cardioid-type NA 1.25 darkfield condenser for high power (100x objective only) darkfield work is optional.

#### **ILLUMINATOR**

Variable-intensity Koehler illumination for apertures up to 1.25. Available in 6V 30W (built-in) or 12V 50W (attached lamp house) models.



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ML5000 Series Ordering Information							
Model	Head	Eyepieces	Objectives	Mech. Stages	Condensers	Illumination	
ML5000	Bino.	KHW10X FN 20	SM Semi Plan 4X, 10X, S40X, S100X oil	Flat-top	Achromatic NA 1.25 with blue filter	Koehler 6V 30W halogen	
ML5100	Trino.						
ML5050	Bino.		BF Semi Plan 4X, 10X, S40X, S100X oil				
ML5150	Trino.						
ML5200	Bino.		Planachromat 4X, 10X, S40X, S100X oil				Koehler 12V 50W halogen
ML5300	Trino.						
ML5400	Bino.						
ML5500	Trino.						
ML5855*	Bino.				Achromat Phase 10X, S20X, S40X, S100X oil	Zernike type phase condenser, NA 1.25 with green filter	Koehler 6V 30W halogen
ML5955*	Trino.						
ML5870*	Bino.				BF Semi Plan Phase 10X, S20X, S40X, S100X oil	Zernike type phase condenser, NA 1.25 with green interference filter 546nm, 29.8mm Ø	Koehler 12V 50W halogen
ML5970*	Trino.						

\* Centering telescope is also included

### Components and Accessories for ML2000 Series

Viewing Heads	
Part Number	Description
MA602	Inclined Binocular Head
MA603	Inclined Trinocular Head
MA657	Binocular Head Erect Image
MA655	Trinocular Head Erect Image
MA403	Inclined Monocular Head
Eyepieces	
MA406	DIN HWF10X eyepiece, FN 18 (each)
MA407	DIN KHW10X compensating eyepiece, FN 20 (each)
MA408	DIN HWF15X eyepiece, FN 9 (each)
MA409	DIN HWF20X eyepiece, FN 9 (each)
Achromat Objectives	
MA482	4X / NA 0.10 DIN S.Flat Achromat objective, WD 20.0mm
MA483	10X / NA 0.25 DIN S.Flat Achromat objective, WD 6.6mm
MA484	20X / NA 0.40 DIN S.Flat Achromat objective, WD 3.1mm
MA485	40XS / NA 0.65 DIN S.Flat Achromat objective, spring loaded, WD 0.4mm
MA486	60XS / NA 0.85 DIN S.Flat Achromat objective, spring loaded, WD 0.2mm
MA487	100XS / NA 1.25 DIN S.Flat Achromat objective, spring loaded, oil, WD 0.13mm
SM Semi Planachromat Objectives	
MA611	4X / NA 0.10 SM Semi Planachromat objective, WD 19.83mm
MA612	5X / NA 0.12 SM Semi Planachromat objective, WD 19.83mm
MA613	10X / NA 0.25 SM Semi Planachromat objective, WD 6.23mm
MA614	20XS / NA 0.40 SM Semi Planachromat objective, spring loaded, WD 3.13mm
MA615	40XS / NA 0.65 SM Semi Planachromat objective, spring loaded, WD 0.43mm
MA616	60XS / NA 0.80 SM Semi Planachromat objective, spring loaded, WD 0.23mm
MA617	100XS / NA 1.25 SM Semi Planachromat objective, spring loaded, oil, WD 0.12mm
BF Semi Planachromat Objectives	
MA690	4X / NA 0.10 BF Semi Planachromat objective, WD 19.83mm
MA691	10X / NA 0.25 BF Semi Planachromat objective, WD 6.23mm
MA692	20X / NA 0.40 BF Semi Planachromat objective, WD 6.1mm
MA693	40XS / NA 0.65 BF Semi Planachromat objective, spring loaded, WD 0.43mm
MA694	50XS / NA 0.95 BF Semi Planachromat objective, spring loaded, WD 0.25mm
MA696	100XS / NA 1.25 BF Semi Planachromat objective, spring loaded, oil, WD 0.15mm
MA811	50X / NA 0.95 BF Semi Planachromat objective, oil with iris, WD 0.24mm
MA813	100X / NA 1.25 BF Semi Planachromat objective, oil with iris, WD 0.15mm
Planachromat Objectives	
MA432	2.5X / NA 0.08 Planachromat objective
MA622	4X / NA 0.10 Planachromat objective
MA623	10X / NA 0.25 Planachromat objective
MA625	40XS / NA 0.65 Planachromat objective, spring loaded
MA627	100X / NA 1.25 Planachromat objective, spring loaded, oil

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<b>Zernike BF Semi Plan Phase Objectives and Components (Set PH-A)</b>	
<b>MA695</b>	10X / NA 0.25 BF Plan Phase objective for use with Zernike-type Condenser
<b>MA697</b>	20X / NA 0.40 BF Plan Phase objective for use with Zernike-type Condenser
<b>MA698</b>	40X / NA 0.65 BF Plan Phase objective for use with Zernike-type Condenser
<b>MA699</b>	100X / NA 1.25 BF Plan Phase objective for use with Zernike-type Condenser
<b>MA715</b>	Zernike-type Condenser with centerable phase annuli, 10x, 20x, 40x and 100x with iris
<b>MA457/1</b>	Extended centering screws for MA715 (each)
<b>MA458</b>	Phase Centering Telescope
<b>MA759</b>	Green Interference Filter, 546nm, 29.8mm diameter
<b>Zernike Achromat Phase Objectives and Components (Set PH-B)</b>	
<b>MA448</b>	10X / NA 0.25 Achromat Phase objective for use with Zernike-type Condenser
<b>MA449</b>	20X / NA 0.40 Achromat Phase objective for use with Zernike-type Condenser
<b>MA450</b>	40X / NA 0.65 Achromat Phase objective for use with Zernike-type Condenser
<b>MA451</b>	100X / NA 1.25 Achromat Phase objective for use with Zernike-type Condenser
<b>MA715</b>	Zernike-type Condenser with centerable phase annuli, 10x, 20x, 40x and 100x with iris
<b>MA457/1</b>	Extended centering screws for MA715 (each)
<b>MA458</b>	Phase Centering Telescope
<b>MA290/05</b>	Green Filter, 29.8mm diameter
<b>Zernike Achromat Phase Objectives and Components (Set PD-A)</b>	
<b>MA448</b>	10X / NA 0.25 Achromat Phase objective for use with Zernike-type Condenser
<b>MA449</b>	20X / NA 0.40 Achromat Phase objective for use with Zernike-type Condenser
<b>MA450</b>	40X / NA 0.65 Achromat Phase objective for use with Zernike-type Condenser
<b>MA715</b>	Zernike-type Condenser with centerable phase annuli, 10x, 20x, 40x and 100x with iris
<b>MA457/1</b>	Extended centering screws for MA715 or MA716 (each)
<b>MA458</b>	Phase Centering Telescope
<b>MA290/05</b>	Green Filter, 29.8mm diameter
<b>Darkfield-Oil Immersion Objectives and Condensers</b>	
<b>MA811</b>	BF Semi Planachromat S50X, NA 0.95, oil with iris diaphragm
<b>MA813</b>	100X, NA 1.25 BF Semi Planachromat objective with iris WD 0.15mm
<b>MA430</b>	DIN S.Plan objective 100X, NA 1.25, oil with iris
<b>MA274</b>	Darkfield condenser, 1.2 -1.33 NA, for use with 50x or 100x with iris ONLY
<b>Darkfield-Oil Immersion Objectives with Dry Condenser System</b>	
<b>MA617/672</b>	SM Plan objective 100X, NA 1.25 with funnel stop
<b>MA661/674</b>	Achromatic sub-stage condenser NA 1.25 with dry darkfield stop
<b>Darkfield Accessories</b>	
<b>MA672</b>	Funnel stop for MA617 SM Plan 100X
<b>MA278/05</b>	Darkfield filter (central stop) for use with filter tray, 29.8mm diameter
<b>MA674</b>	Darkfield stop to fit MA661 Achromatic NA 1.25 condenser
<b>Condensers</b>	
<b>MA661</b>	Achromatic sub-stage condenser 1.25 NA w/ iris and 30mm filter tray
<b>MA661/674</b>	Achromatic sub-stage condenser 1.25 NA w/ dry darkfield stop
<b>MA715</b>	Zernike-type Condenser with centerable phase annuli, 10x, 20x, 40x and 100x with iris
<b>MA716</b>	Zernike-type Condenser with centerable phase annuli, 10x, 20x, 40x and 100x with iris and darkfield stop
<b>MA457/1</b>	Extended centering screws for MA715 or MA716 (each)

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Polarizers	
<b>MA608</b>	Polarizer set for ML2000 (fits over 44mm lamphouse analyzer to fit viewing head)
<b>MA608/05</b>	Polarizer set for ML5400, ML5500, ML5850, ML5950 (50 watt version) (fits over 37mm lamphouse analyzer to fit viewing head)
<b>MA608/10</b>	Polarizer set for ML5000, ML5100, ML5200, ML5300, ML5800, ML5900 (30 watt version) (fits over 44mm lamphouse analyzer to fit viewing head)
Filters	
<b>MA196</b>	ND2 neutral density filter, 29.8mm diameter
<b>MA197</b>	ND8 neutral density filter, 29.8mm diameter
<b>MA289/05</b>	Blue filter, clear, 29.8mm diameter
<b>MA290/05</b>	Green filter, clear, 29.8mm diameter
<b>MA759</b>	Green Interference Filter, 546nm, 29.8mm diameter
<b>MA291</b>	Polarizing Filter, 546nm, 29.8mm diameter
Stages	
<b>MA676</b>	Attachable clinical specimen holder for MA596R and MA596L
<b>MA595R</b>	Right Handed Graduated mechanical stage, 30mm X 70mm, drop down controls for RM and ML2000, ML2100, ML2200, ML2300, ML2800 and ML2900
<b>MA595L</b>	Left Handed Graduated mechanical stage, 30mm X 70mm, drop down controls for RM and ML2000, ML2100, ML2200, ML2300, ML2800 and ML2900
<b>MA596R</b>	Right Handed Flat top stage, 78mm X 52mm, drop down controls for ML2400, ML2500, ML2700, ML2850, ML2950 and ML5000
<b>MA596L</b>	Left Handed Flat top stage, 78mm X 52mm, drop down controls for ML2400, ML2500, ML2700, ML2850, ML2950 and ML5000
Eyepiece Micrometers	
<b>MA284</b>	Cross-line reticle, 21mm diameter
<b>MA255</b>	10mm divided into 100 units, 21mm diameter
<b>MA256</b>	5mm divided into 100 units, 21mm diameter
<b>MA283/05</b>	10mm square divided into 100 parts, 1mm square, 21mm diameter
<b>MA540</b>	Cross-line reticle with 0.1mm graduations, 21mm diameter
<b>MA254/05</b>	Walter & Beckett reticle, 21mm diameter
Stage Micrometers	
<b>MA285</b>	1mm divided into 100 units, 0.01mm
<b>MA286</b>	0.04" divided into 40 units, 0.001"
Miscellaneous	
<b>MA200</b>	Eyeshields for MA407 eyepieces (each)
<b>MA275/05</b>	Spare bulb 12V 50W halogen
<b>MA326</b>	Spare bulb 6V 30W halogen
<b>MA327</b>	Fuse 3A
<b>MA609/05</b>	Carrying case for ML2000 and ML5000 series
<b>MA700</b>	Immersion Oil, 15cc vial
<b>MA701</b>	Dust Cover fits ML2000 and ML5000 series