Advanced Semiconductor Microscopes
M68 and M50-12

Fein Optic M68
Brightfield / Darkfield / Polarization / DIC
6" & 8" Wafer

Fein Optic M50-12
Brightfield / Darkfield / Polarization / DIC
12" Wafer

M68 Advanced Semiconductor Microscope Features

1. Ergonomic tilting trinocular head adjustable from 5-35º to relieve fatigue from long term operation. Beam splitting ratio: 100:0, 0:100. Optional 3-position beamsplitter with 100% - 80%/20% - 100% is available.

2. High eyepoint widefield plan eyepiece PL10x/23mm providing a clear image even at the edge of the FOV. Eyepieces accept 26mm diameter reticle.

3. Motorized Brightfield/Darkfield Sextuple nosepiece with DIC slot.

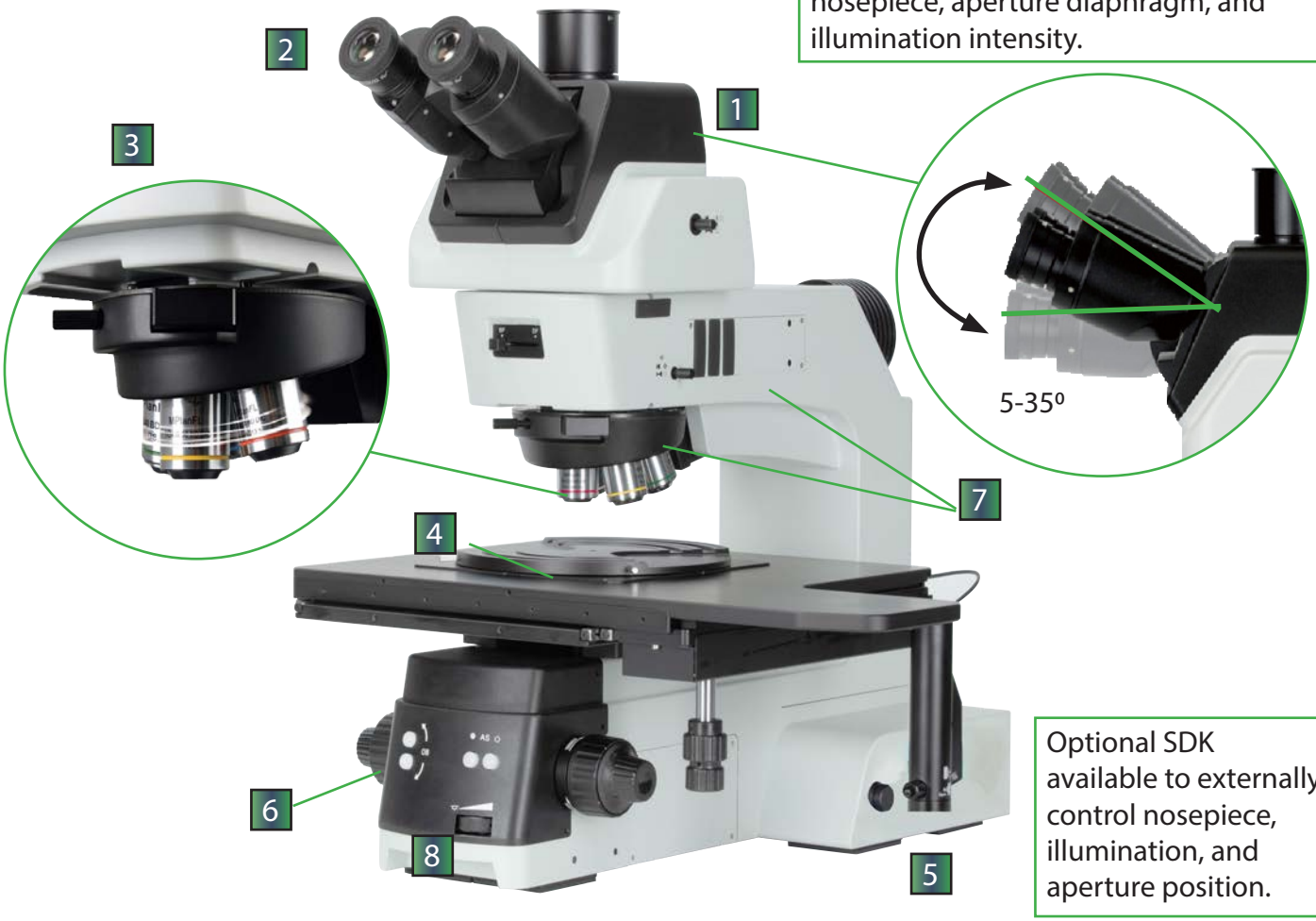
4. Manual and Motorized Stage options in multiple sizes with 6" and 8" wafer holder. Supports up to a 200mm wafer and 11" of FPDs.

5. Frame options:
   - Reflected light with 10w LED illuminator.
   - Transmitted and Reflected light.
   - Transmitted 5w LED optional.

6. Focus options:
   - Manual Fine / Coarse Focus
   - Motorized Focus
   - Motorized Auto Focus
   - Optional Custom Realtime Laser Tracking Autofocus

7. Filters & Attachments:
   - Polarizer & Analyzer
   - Interference filters
   - DIC prism

8. Front operating buttons for easy and convenient operation of motorized nosepiece, aperture diaphragm, and illumination intensity.



Optional SDK available to externally control nosepiece, illumination, and aperture position.

M50-12 Advanced Semiconductor Microscope Features

1. Ergonomic tilting trinocular head adjustable from 5-35⁰ to relieve fatigue from long term operation. Beam splitting ratio: 100:0, 0:100. Optional 3-position beamsplitter with 100% - 80% / 20% - 100% is available.

2. High eyepoint widefield plan eyepiece PL10x/25mm providing a clear image even at the edge of the FOV. Eyepieces accept 27mm diameter reticle.

3. Motorized Brightfield/Darkfield Sextuple nosepiece with DIC slot.

4. Manual and Motorized Stage options in multiple sizes with 12" wafer holder. Supports up to a 300mm wafer and 17" of FPDs.

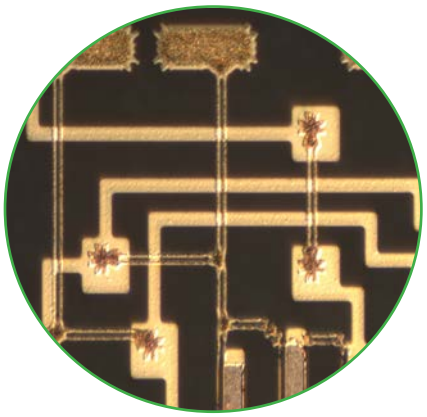
5. Frame options:
   - Reflected light with 10w LED illuminator.
   - Transmitted 5w LED optional.

6. Focus options:
   - Manual Fine / Coarse Focus
   - Motorized Focus
   - Motorized Auto Focus
   - Optional Custom Realtime Laser Tracking Autofocus

7. Filters & Attachments:
   - Polarizer & Analyzer
   - Interference filters
   - DIC prism

8. Front operating buttons for easy and convenient operation of motorized nosepiece, aperture diaphragm, and illumination intensity.

Optional SDK available to externally control nosepiece, illumination, and aperture position.



LWD Brightfield / Darkfield / DIC Plan Achromat Objective Lenses

- LWD Plan Achromat BD DIC 5x, NA 0.15; WD 9.0mm
- LWD Plan Achromat BD DIC 10x, NA 0.3; WD 9.0mm
- LWD Plan Achromat BD DIC 20x, NA 0.45; WD 3.4mm
- LWD Plan Achromat BD DIC 50x, NA 0.55; WD 7.5mm
- LWD Plan Achromat BD DIC 100x, NA 0.80; WD 2.1mm

Brightfield / Darkfield Plan Semi Apochromat Objective Lenses

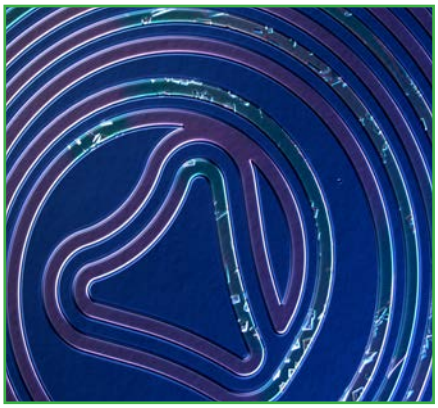
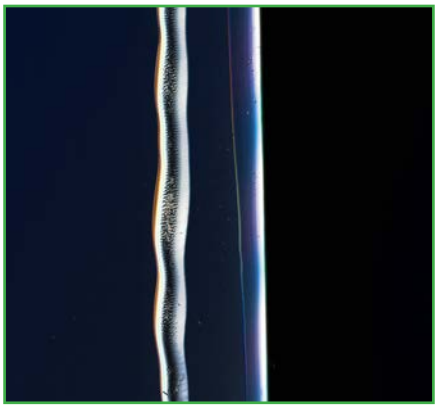
- BD Semi Apochromat 5x, NA 0.15; WD 13.5mm
- BD Semi Apochromat 10x, NA 0.30; WD 9.0mm
- BD Semi Apochromat 20x, NA 0.50; WD 2.5mm
- BD Semi Apochromat 50x, NA 0.80; WD 1.0mm
- BD Semi Apochromat 100x, NA 0.90; WD 1.0mm

LWD Brightfield / Darkfield Plan Semi Apochromat Objective Lenses

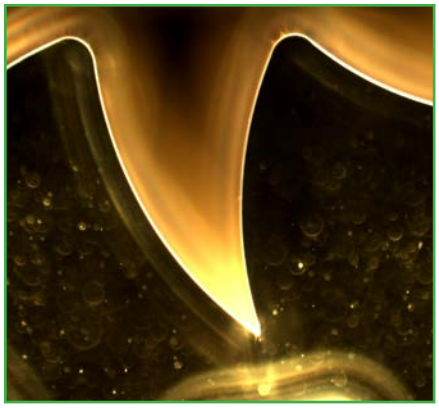
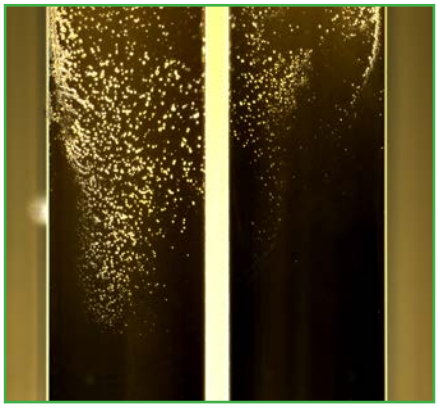
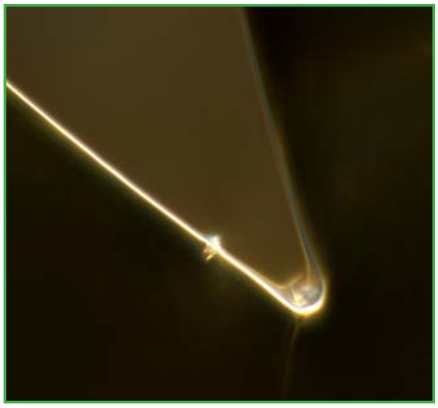
- LWD BD Semi Apochromat 20x, NA 0.40; WD 8.5mm
- LWD BD Semi Apochromat 50x, NA 0.55, WD 7.5m
- LWD BD Semi Apochromat 50x, NA 0.55; WD 10.6mm
- LWD BD Semi Apochromat 100x, NA 0.80; WD 2.1mm
- LWD BD Semi Apochromat 100x, NA 0.80; WD 3.5mm

Advanced Semiconductor Microscope Performance

Fein Optic Advanced Semiconductor Microscope systems are tailored for demanding analysis of Semiconductors and MEMS. Providing multiple contrasting techniques, high optical performance and crisp images, these instruments generate reliable and reproducible results.

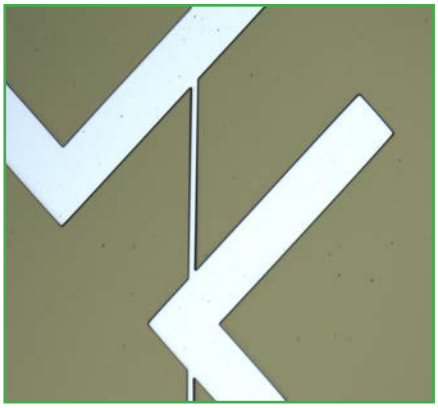

The above images of a Silicon wafer with patterned Si02 have a thickness of 1µm and were captured with a 5x objective lens using DIC. The first image notates residual PR (photoresist). The second and third images detail the edge of the wafer illustrating a crisp, detail rich result.

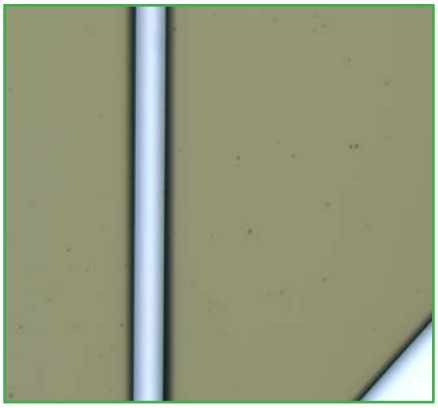
10x 20x 100x

The above MEMS images with Pyrex Gold Chrome and SU-8 were captured using Darkfield at varying magnifications. Details provided in these images allow for the inspections of defects, contaminants, and mechanical stresses.

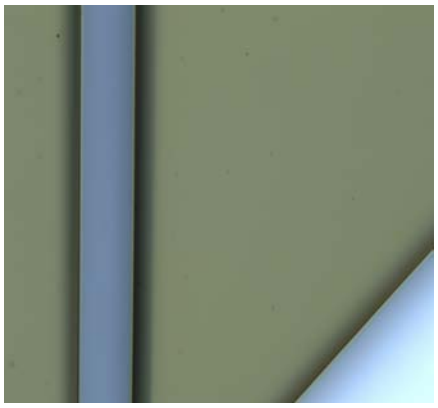
Advanced Semiconductor Microscope Performance



10x



50x



100x

The above images of a Silicon wafer with thin negative photoresist were captured using Brightfield at varying magnifications. Here the observer is measuring CD, the Critical Dimension of the small line widths to assure quality and integrity during the manufacturing process.

10x

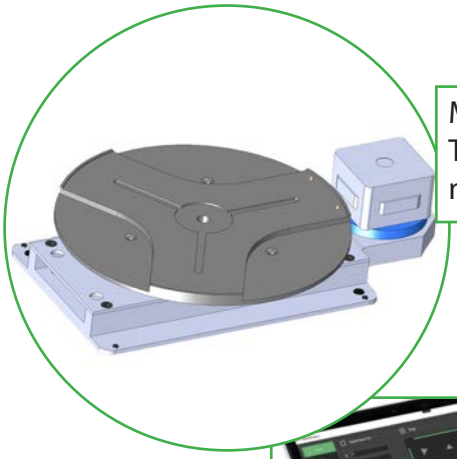
50x

100x

This set of images are identical to the previous set of images with the only variance being the contrast method. Here the images were captured using DIC at varying magnifications. With DIC details become visible that were not present in the images captured using Brightfield.

Advanced Semiconductor Microscope Optional Accessories

MWZ Profiler
Widefield Extended Resolution Automatic Surface Profiler.
Nanometer level resolution using Widefield 5x objective lens.

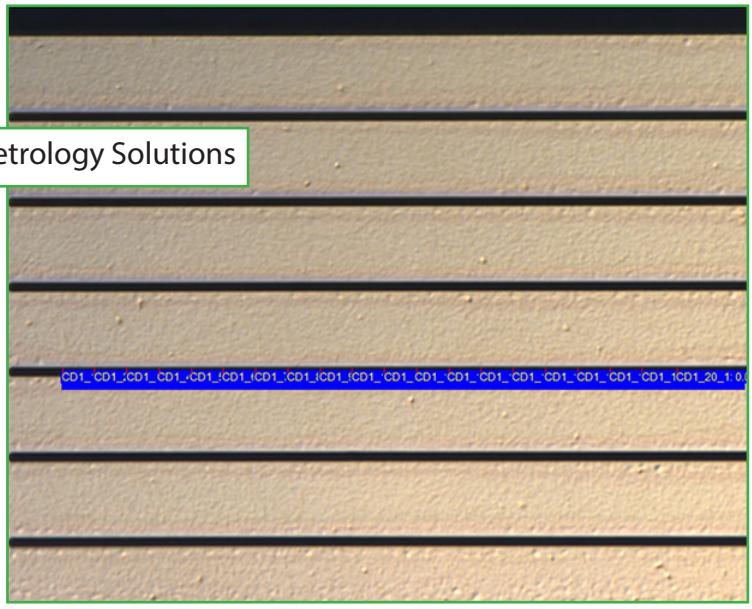


Motorized X-Y-Z
Theta stages for full automation with multiple axes of motion.

Wafer Loaders / Wafer Handlers
Custom System Solutions

Advanced Semiconductor Microscope Optional Accessories

Critical Dimension Metrology Solutions



UV / NIR / SWIR Custom Solutions

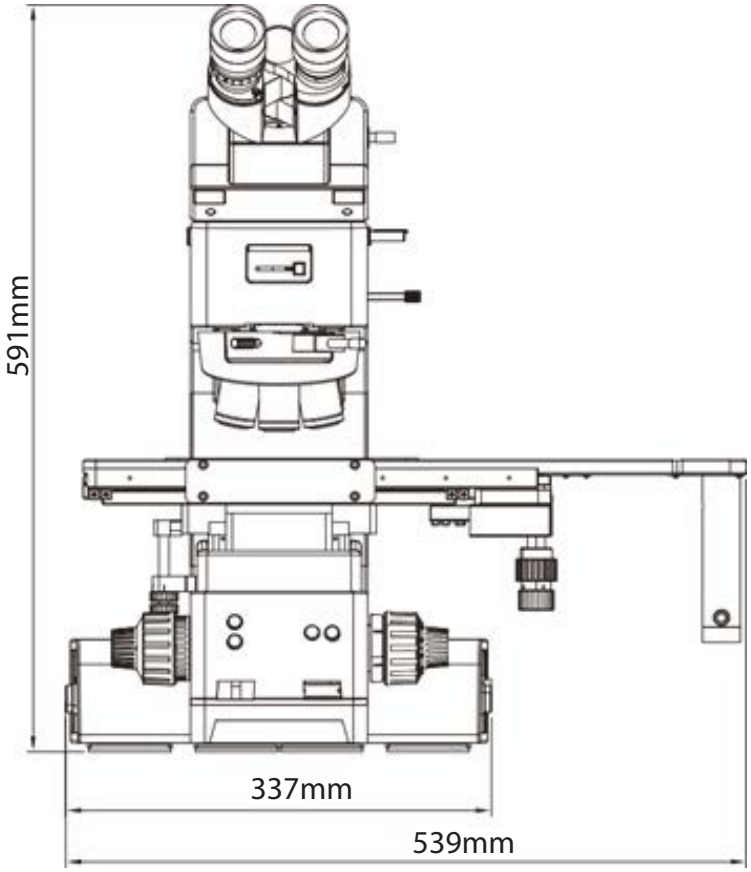
Wafer Defect Mapping and Review Custom Solutions

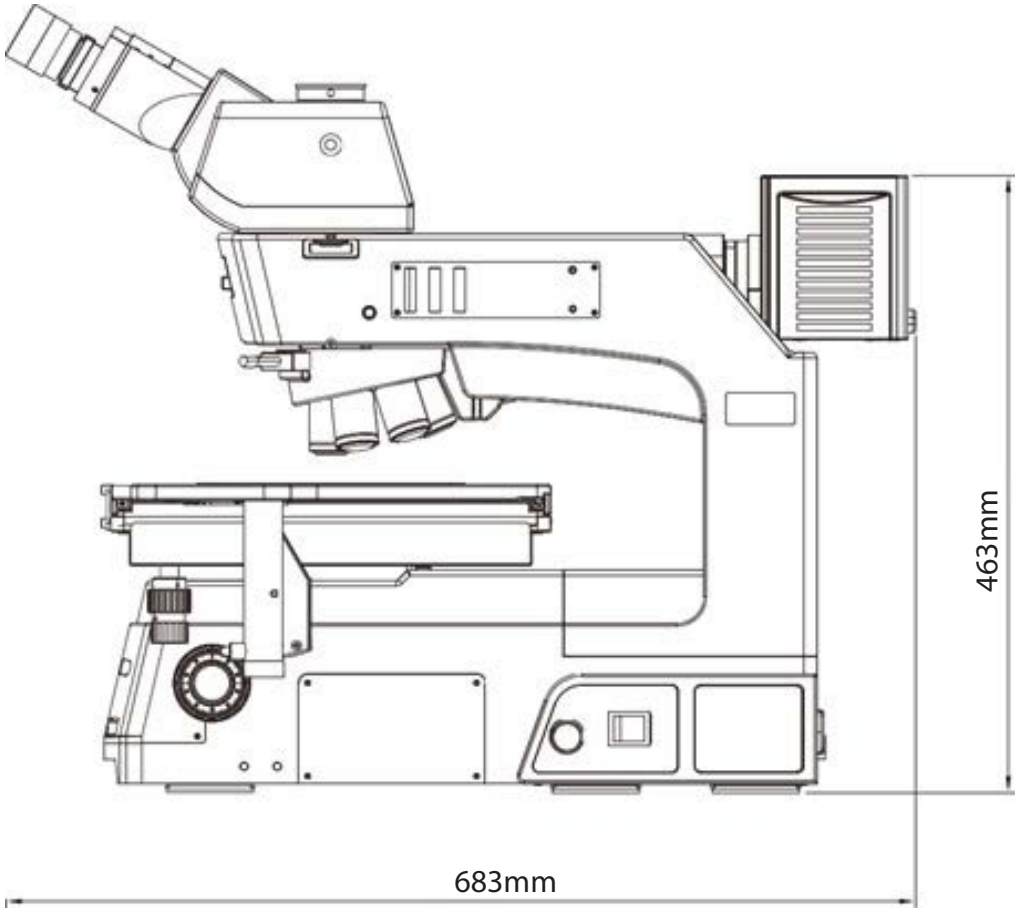
AI Modules
Automatically Detect and Measure
the Most Challenging Features

Advanced Semiconductor Microscope Specifications

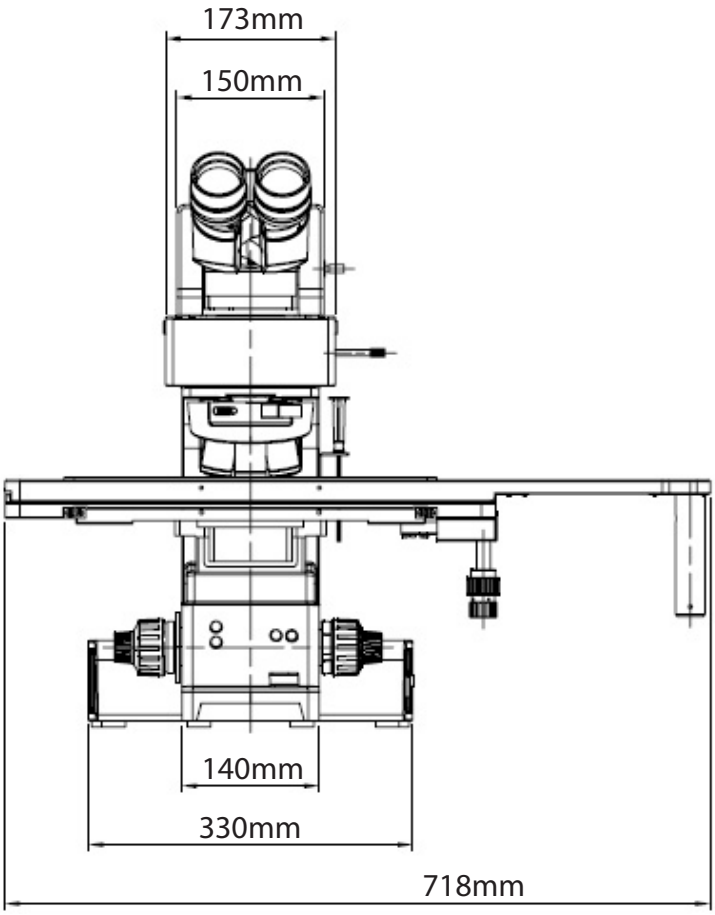
Model	M68	M50-12
Optical System	Infinity Color Corrected Optical System	
Modalities	Brightfield, Darkfield, Polarization, DIC	Brightfield, Darkfield, Polarization, DIC
Viewing Head	Ergo tilting trinocular head, upright and erect image, adjustable from 5-35º; beam splitter 100:0 or 0:100. Interpupillary distance 50-76mm.	Ergo tilting trinocular super widefield head, upright and erect image, adjustable from 5-35º; beam splitter 100:0 or 20:80. Interpupillary distance 50-76mm.
Eyepieces	High eyepoint widefield plan eyepiece PL10x/23mm. Eyepieces accept 26mm diameter reticle.	High eyepoint widefield plan eyepiece PL10x/25mm. Eyepieces accept 27mm diameter reticle.
Objective Lenses	Infinity Corrected LWD Brightfield Plan Achromat Objectives 5x, 10x, 20x, 50x, 100x	
	Infinity Corrected High Resolution Brightfield Semi Apo Objectives 5x, 10x, 20x, 50x, 100x	
	Infinity Corrected LWD BD Plan Achromat Objectives 5x, 10x, 20x, 50x, 100x	
	Infinity Corrected BD Semi Apochromat Objectives 5x, 10x, 20x, 50x, 100x	
	Infinity Corrected LWD BD Plan Semi Apochromat Objectives 20x, 50x (WD 7.5mm), 50x (WD 10.6mm), 100x (WD 2.1mm), 100x (WD 3.5mm)	
Nosepiece	Motorized Brightfield / Darkfield Sextuple nosepiece with DIC slot	
Focus Adjustment	Options for Manual fine/coarse focus; Motorized Focus; Motorized Auto Focus. Optional real-time laser tracking autofocus is available. Low position coaxial focus mechanism, coarse range: 35mm, fine precision: 0.001mm. Upper limit and tension adjustment. Built-in 100~240V wide voltage system.	
Frame	Reflected light frame or Transmitted Reflected light frame	
Stage	Manual 158mm x 158mm Manual 210mm x 210mm Motorized 154mm x 154mm Motorized 255mm x 215mm 6" and 8" wafer holder	Manual 305mm x 305mm Motorized 302mm x 302mm 12" wafer holder
Flat Panel Displays (FPDs) Support	Supports 11" of FPDs	Supports 17" of FPDs
Wafer Support	Supports up to a 200mm Wafer	Supports up to a 300mm Wafer
Illumination	10W LED Brightfield/Darkfield reflected illuminator, electronic variable aperture and field diaphragm, center adjustable; switch for changing between BF/DF; slots for filters and polarizing kit.	
Filters & Attachments	IFF50 Yellow filter for photoresist inspection applications. Polarizing kit, Interference filers, DIC prism	
C-Mount Adapter	0.5x / 0.65x / 1x	

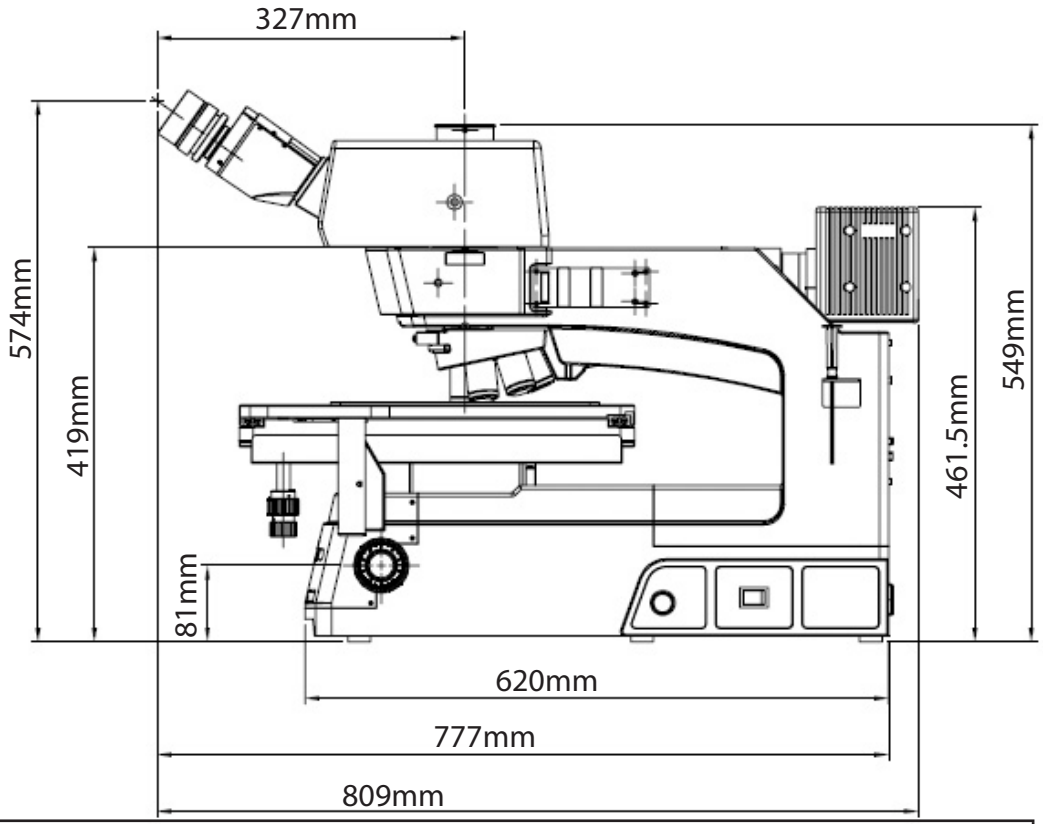
Fein Optic M68 Advanced Semicondcutor Microscope Dimensions



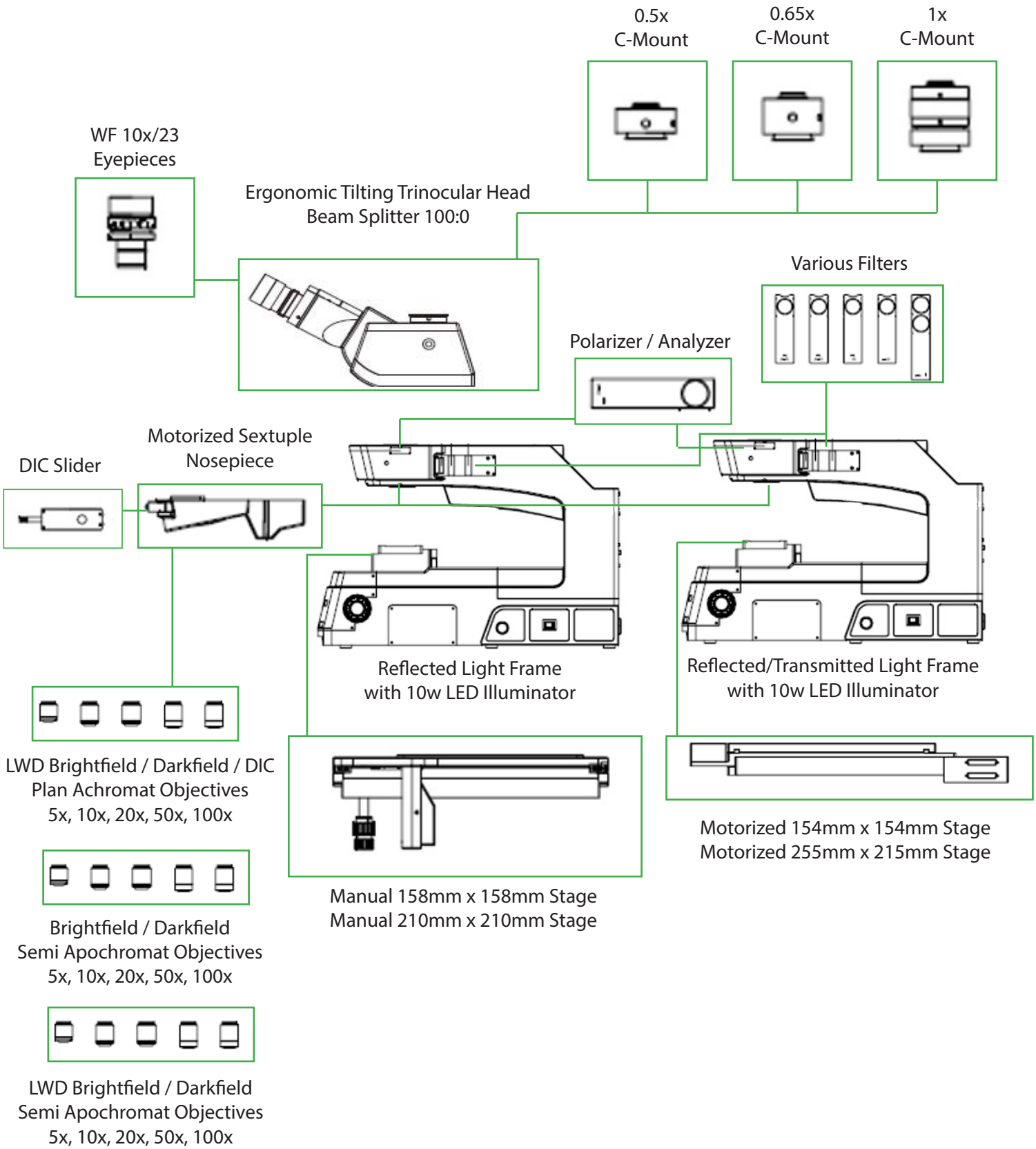


Fein Optic M50-12 Advanced Semicondcutor Microscope Dimensions





Fein Optic M68 Advanced Semicondcutor Microscope System Overview



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