

# BXC Series

Modular Microscope Assembly

Compact Microscope Assemblies  
for High-Resolution Imaging and Integration



# High-Quality Compact Microscope Assemblies

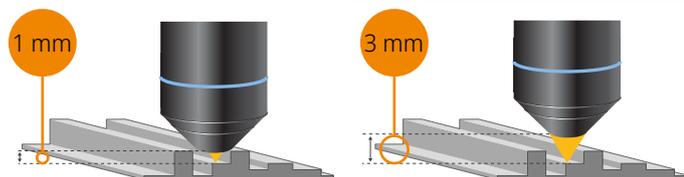
The BXC series offers the high-quality microscope components you know and trust from Evident, but in a compact, mountable, and configurable format. These off-the-shelf optical-mechanical assemblies are ready to be designed into your scientific instruments and devices.

## High-Performance Objective Lenses

### Combined high numerical aperture and long working distance

Objective lenses are crucial to a microscope's performance.

The MXPLFLN objectives add depth to the MPLFLN series for epi-illumination imaging by maximizing numerical aperture and working distance at the same time. Higher resolutions at 20X and 50X magnifications typically mean shorter working distances, which forces the sample or objective to be retracted during sample exchange and requires slow sample handling during observation. In many cases, the MXPLFLN series' 3 mm working distance eliminates this problem, enabling faster inspections with less chance of the objective hitting the sample.



Model Name	NA	WD	Model Name	NA	WD
MPLFLN20X	0.45	3.1 mm	MXPLFLN20X	0.6	3 mm
MPLFLN20XBD	0.45	3 mm	MXPLFLN20XBD	0.55	3 mm
MPLFLN50X	0.8	1 mm	MXPLFLN50X	0.8	3 mm
MPLFLN50XBD	0.8	1 mm	MXPLFLN50XBD	0.8	3 mm

### Wavefront aberration control

High-end manufacturing processes—such as wavefront aberration-controlled selection of lens assemblies—are used for MXPLFLN series objectives. This process keeps variation in device performance to a minimum.

### Form the optimal image

Select from five tube lenses to meet a variety of applications.



Tube Lens Comparison Chart

Model Name	U-SWATLU	U-TLU	U-TLUIR	SWTLU-C	TLU-C
Projection area (mm)	Φ26.5 mm	Φ22 mm	Φ22 mm	Φ26.5 mm	Φ22 mm
Mounting interface	Circular dovetail (fixed with a tool)*			Threaded: M41 × 0.5 mm	Threaded: M36 × 0.5 mm
Weight	460 g	350 g	350 g	94 g	40 g
Focal plane position	102 mm from the reference place when using U-TV1XC			151.3 mm from the reference plane	
Magnification	1X				
Focal length	180 mm				

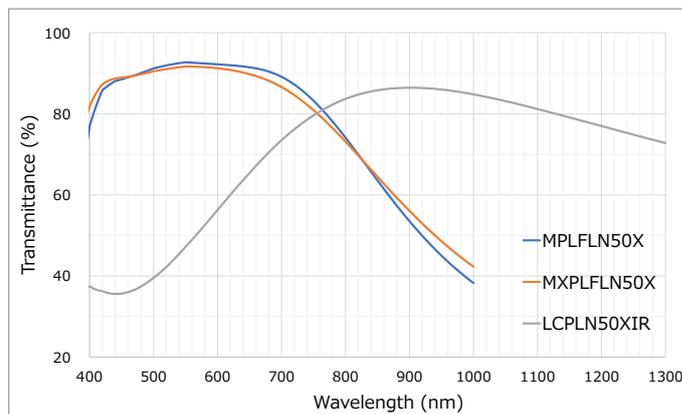
\*Dovetail easily and directly fits Evident illuminators and Evident camera adapters.

### Improved image flatness

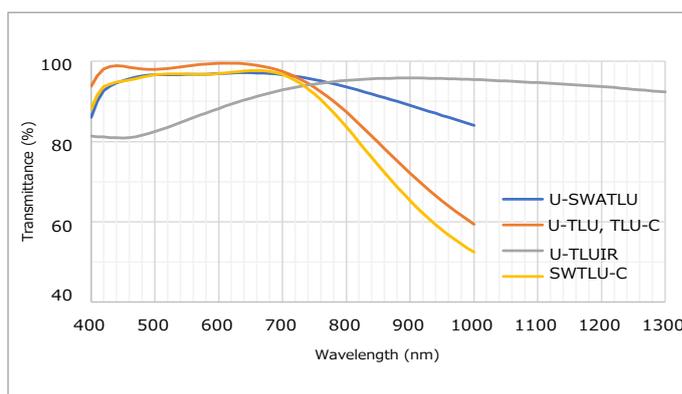
The image flatness of the MPLFLN 2.5X, 5X, and 5X brightfield/darkfield objectives has been improved, making it faster to obtain stitched images at low magnifications. For higher throughput in darkfield observation, we introduced a brightfield/darkfield 2.5X objective—the MPLFLN2.5XBD.

### Broad spectral range

From visible to near-infrared (NIR), our advanced optical fabrication and coating technology provides users and manufacturers with a variety of objective lens and tube lens combinations to simplify their system requirements with standard products.



Transmittance curves of three available objectives



Transmittance curves of five available tube lenses

## What Configuration Will You Build?

Part of our BX microscope series, BXC microscope components are compact and designed for OEM integration and development. Their versatility and modularity make them a good choice for inspection or imaging applications such as instruments designed for wafer alignment, bump measurement, and image stitching.

### BXC Series Configuration Examples

BX53M	BXC-CBRML system		BXC-CBB system	
Conventional microscope	<b>Entry</b> Save space with only one BF objective	<b>Versatile</b> Basic, compact assemblies	<b>Advanced</b> Fully motorized assemblies for clean rooms	
				
Example configurations	BXFM-F, BXFM-ILHS, U-SWATLU, U-KMAS, BX3M-LEDR, CMP-LLHECBL, BXC-CBRML, STM7-MMOBAD BD-M-AD, SLMPLN20X	BXFM-F, BXFM-ILHS, U-SWATLU, U-KMAS, BX3M-LEDR, CMP-LLHECBL, U-D5BDREMC, BXC-REMECBL, U-MIXR-2, U-MIXRECBL, BXC-CBRML, MPLFLN5XBD2, LMPLFLN20XBD, LMPLFLN50XBD	BXC-FSU, BXC-RLI, U-SWATLU, BX3M-LEDR, U-D5BDREMC-VA, BXC-CBB, BXC-CBE1, BXC-LCBL1M, BXC-LCBL3M, MPLFLN2.5XBD, MPLFLN5XBD2, MPLFLN10XBD-2, MXPLFLN20XBD, MXPLFLN50XBD	
Objective lens	20X (NA: 0.25, WD: 25 mm)	5X NA: 0.15, WD: 12 mm 20X NA: 0.4, WD: 12 mm 50X NA: 0.5, WD: 10.6 mm	2.5X NA: 0.08, WD: 8.7 mm 5X NA: 0.15, WD: 12 mm 10X NA: 0.3, WD: 6.5 mm 20X NA: 0.55, WD: 3 mm 50X NA: 0.8, WD: 3 mm	
Minimum resolution @λ=550 nm	1.34 μm (20X objective)	0.67 μm (50X objective)	0.42 μm (50X objective)	
Maximum depth of field @λ=550 nm	± 4.4 μm (20X objective)	±12.2 μm (5X objective)	± 43 μm (2.5X objective)	
Weight—without BXFM-F, stand, controller	3.4 kg (7.5 lb)	4 kg (8.8 lb)	8.3 kg (18.3 lb)	
Observation modes	BF	BF, DF, MIX	BF, DF	
Z-stroke	30 mm (manual)	30 mm (manual)	Hardware provided by integrator	
Autofocus support	—	—	Available	
Filter slider slots	3	3	1	
Nosepiece	Motorized	—	Available	Available
	Vacuum	—	—	Available
Max number of objectives	1	5	5	
Optical field number (mm)	26.5	26.5	26.5	
Aperture stop	—	—	Available	
Dimensions—without BXFM-F, stand, controller (W × D × H)	108 mm × 249 mm × 215 mm (4.3 in. × 9.8 in. × 8.5 in.)	108 mm × 249 mm × 230 mm (4.3 in. × 9.8 in. × 9 in.)	132 mm × 404 mm × 277 mm (5.2 in. × 15.9 in. × 10.9 in.)	

\*These are example configurations. Please work with your local representative to choose the components that meet your requirements.

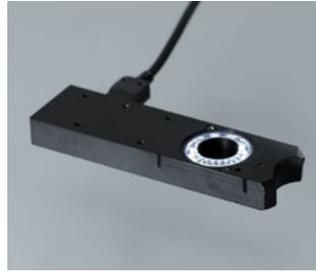
# Advanced Options for System Design and Automation

## Versatile directional darkfield

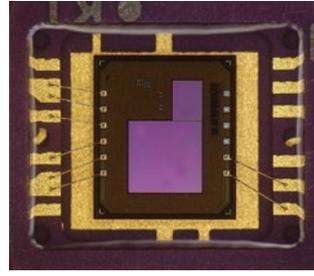
Darkfield is used to observe scattered or diffracted light from a sample—such as scratches or flaws—on a mirror surface or semiconductor wafer. The MIX slider realizes darkfield without large, dedicated optics and enhances traditional darkfield with 16 individually controllable LEDs, enabling you to control the direction of light shining on the sample. In addition, this directional darkfield technique, achieved by using the MIX slider, can be combined with brightfield, simple polarized light, or fluorescence observation.



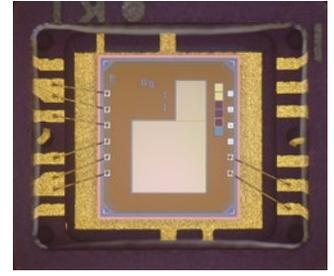
MIX slider (top side)  
U-MIXR-2



MIX slider (bottom side)  
U-MIXR-2



Darkfield



MIX with brightfield

## Wide variety of revolving nosepieces

As the demand for automation increases, so does the demand for motorized revolving nosepieces. Evident has proven performance with the U-D5BDREMC and U-D6BDREMC five- and six-position motorized revolving nosepieces. Now the U-D5BDREMC-VA class 1 clean room compatible motorized revolving nosepiece removes dust and other particles using a vacuum. Manual, coded, and centerable revolving nosepiece as well as adapters for a single objective lens can be configured into BXC assemblies.



Motorized BD revolving nosepiece  
with vacuum function  
U-D5BDREMC-VA



Measurement objective adapter  
STM7-MMOBAD

## Autofocus Sensing Unit

The BXC-FSU is a Class 1 laser product\*<sup>1</sup> to enable active multipot sensing to monitor the direction of the focal position and focus status. This sensor works well for low-contrast samples like bare wafers. A unique algorithm outputs a stable focus signal regardless of the objective lens magnification and noise caused by peripheral light. The command reference manual, instruction manual, and sample software are available on our website\*<sup>2</sup>.

\*<sup>1</sup> This is a Class 1 laser product, so no additional safety measures are required.

\*<sup>2</sup> Application manuals are available on request.



Autofocus Sensing Unit  
BXC-FSU

## Fast, Easy System Integration

### Compact control box

The BXC-CBRML and BXC-CBB control boxes have a small footprint, no fan, and variable mounting options (e.g., wall or ceiling). Depending on the control box, functions like the MIX slider, illuminator, motorized revolving nosepiece, and LED light source can be integrated and controlled using your software.



Control box  
BXC-CBRML

### Quick access to technical information

Scan QR code for 3D CAD data, datasheets, regulatory documentation and more:



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