

RM21™ Classic Microscope

Supported Methods

- ▶ *Epi-fluorescence microscopy*
- ▶ *Single Molecule Localization Microscopy*
- ▶ *Dichroic TIRF* †
- ▶ *Köhler Illumination* †
- ▶ *Z-axis focus correction* †
- ▶ *Active 3D correction* †

Microscope Advantages

- ▶ *Direct optical access*
- ▶ *Integrated XYZ piezo nanopositioning*
- ▶ *High stability microscope designed for nanoscopy*
- ▶ *Automated objective lens positioning*
- ▶ *Automated XY long range travel*
- ▶ *Multiple microscopy methods supported*

Product Description

The RM21™ Classic Microscope is an inverted optical microscope that has been specifically designed for nanometer scale microscopy. The RM21™ Classic microscope is ideal for single molecule localization microscopy (e.g. STORM/PALM) and epifluorescence microscopy but can be extended to other microscopy methods.

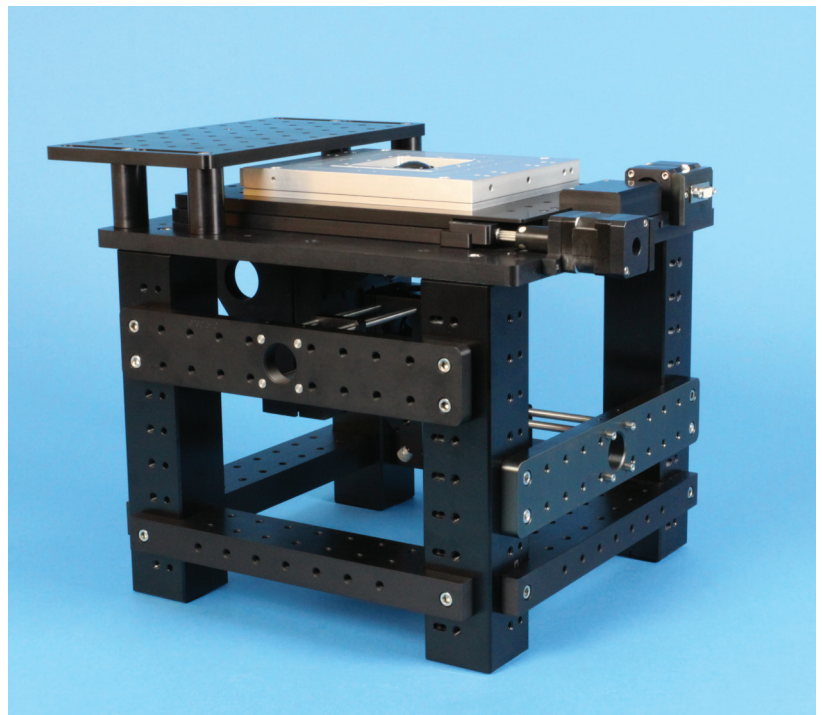
In common with all RM21™ microscopes, there is direct access to the optical pathway and the microscope has been engineered for precision alignment and nanoscale stability in all three axes. All RM21™ microscopes are compatible with 30mm and 60mm‡ cage systems and are designed to be mounted on standard optical tables.

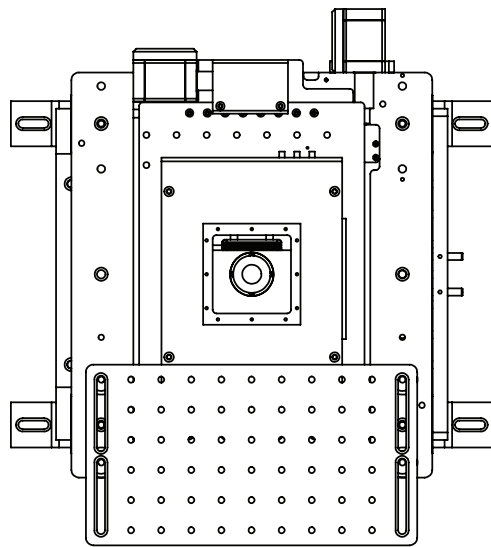
The RM21™ Classic Microscope includes a sub-nanometer precision, XYZ closed loop piezo nanopositioning system designed to meet the requirements of super resolution microscopy.

In addition to the nanopositioning stage are three axes of precision stepper motor control for millimeter range motion. All micropositioning axes use our proprietary intelligent control for low drift and high performance with 95nm step size.

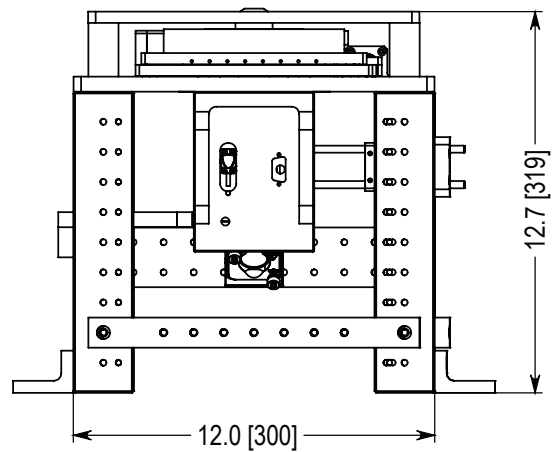
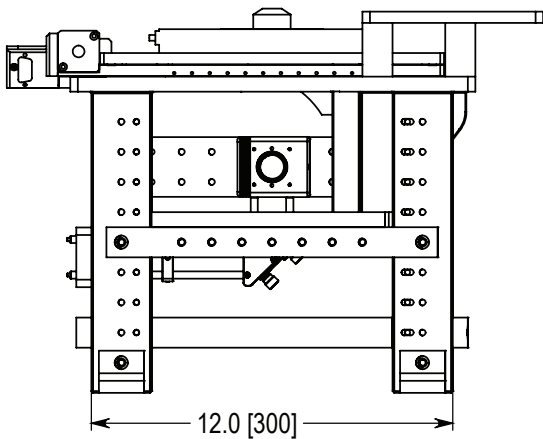
The z- axis objective lens holder is precision aligned with the optical axis of the microscope and accomodates one objective lens. Unlike other inverted optical microscopes, the total range of motion is 50mm. The XY microscope stage travels 25mm per axis and has been engineered for nanopositioning use. All automated axes may be ordered with optional position encoders to provide relative displacement readouts.

In addition to the supported optical microscopy methods listed above, the RM21™ Classic microscope is also well suited for optical and magnetic tweezers, and atomic force microscopy.





Top View



Above: Dimensions (in inches) of the RM21™ Classic Microscope. Dimensions of the metric model shown in [].

RM21™ Classic Microscope

Microscope Specifications

Micropositioning Axes	X, Y, Z
Range of motion (XY)	25 mm
Range of motion (Z)	50 mm
Step Size (motor)	95 nm
Micropositioning Controller	Micro-Drive®
Digital Interface	USB 2.0
Threaded hole size	1/4"-20 or M6
Threaded hole spacing	1" or 25mm
Precision aligned shelves	4
Side breadboards	2
Sliding breadboard	1
Foot brackets	4
Vertical Cage Plate	1
Body Material	Anodized Aluminum

Nanopositioning Specifications

Range of motion	200 x 200 x 200 μ m
Resolution	0.4 nm
Resonant Frequencies	
X axis	270 Hz \pm 20%
Y axis	185 Hz \pm 20%
Z axis	110 Hz \pm 20%
Stiffness	1.0 N/ μ m
$\theta_{roll}, \theta_{pitch}$ (typical)	≤ 1 μ rad
θ_{yaw} (typical)	≤ 3 μ rad
Recommended max. load (horizontal)*	0.5 kg
Recommended max. load (vertical)*	0.2 kg
Body Material	Anodized Aluminum
Controller	Nano-Drive®

* Larger load requirements should be discussed with our engineering staff.

Additional Notes

All models available in imperial (-I) or metric (-M).

Supported lens threads: RMS, M25, M26, M27, M32.

Due to the multiplicity of supported methods, user specific optics are not included.

Side breadboards compatible with SM1/30mm cage systems.






‡Compatibility with 60mm cage system available as an option.

† Applications require additional options.

Available options

- TIRF Module - manual or motorized
- TIRF Lock
- Köhler Illumination
- Nano-Cyte®
- Position encoders added to a specified axis

Compatible Software Packages

 LabVIEW control Examples, tutorial, and Nano-Route® 3D supplied with Nano-Drive® USB interfaces.	 Image-Pro AMS USB and analog motion control	 µManager THE OPEN SOURCE MICROSCOPY SOFTWARE USB motion control
	 MetaMorph USB and analog motion control	 SLIDEBOOK 5.0 Analog motion control, 1 or 2 axes.