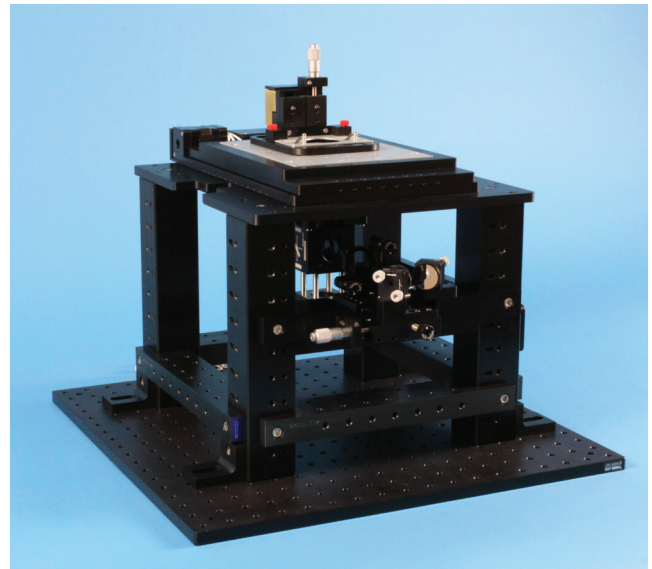
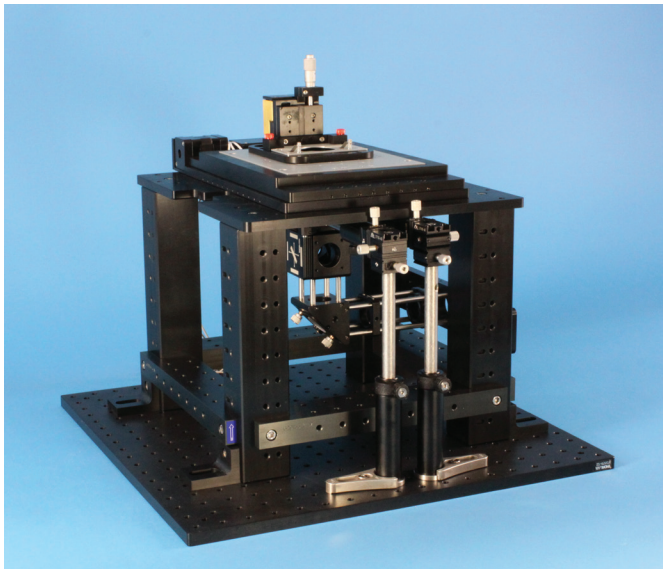


RM21™ Advanced Microscope

Supported Methods

- ▶ *Epi-fluorescence microscopy*
- ▶ *Single Molecule Localization Microscopy*
- ▶ *Colocalization Single Molecule Spectroscopy (CoSMoS)[†]*
- ▶ *Dichroic TIRF*
- ▶ *Köhler Illumination[†]*
- ▶ *Z-axis focus correction[†]*
- ▶ *3D focus correction[†]*



Above: The RM21™ Advanced Microscope shown in the CoSMoS configuration (left) and dichroic TIRF configuration (right)

Product Description

The RM21™ Advanced Microscope is an inverted optical microscope with a fixed objective lens position for maximum stability. The RM21™ Advanced microscope is our most versatile inverted optical microscope capable of supporting super resolution microscopy, multi-spectral CoSMoS, and a variety of light microscopy methods.

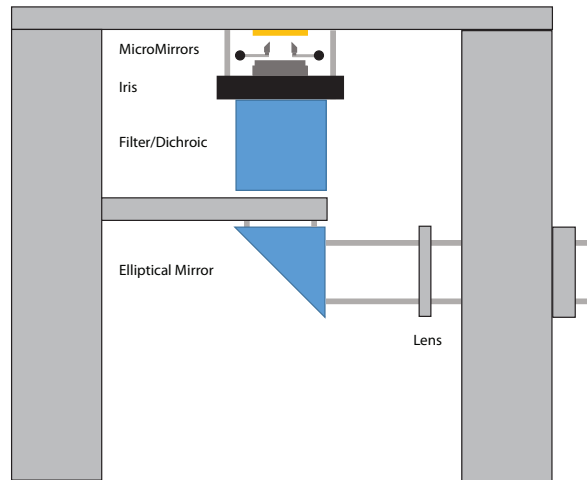
In common with all RM21™ microscopes, there is direct access to the optical pathway and the microscope has been engineered for precision alignment and nanoscale stability in all three axes. All RM21™ microscopes are compatible with 30mm and 60mm[‡] cage systems and are designed to be mounted on standard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

The RM21™ Advanced Microscope includes a sub-nanometer precision, XYZ closed loop piezo nanopositioning system designed to meet the requirements of super resolution microscopy. The objective lens position is fixed and precision aligned with the optical axis of the microscope and accommodates one lens. The position of the lens is fixed to maximize the stability of the microscope. In addition to the nanopositioning stage are two 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 RM21™ Advanced microscope use can be extended to additional techniques by simply adding standard options. In addition to the supported methods listed above, this microscope is also suitable for applications such as optical and magnetic tweezers, and AFM integration.

Microscope Advantages

- ▶ *Direct optical access*
- ▶ *Fixed objective lens for maximum stability*
- ▶ *Integrated XYZ piezo nan positioning*
- ▶ *Automated XY microscope stage*
- ▶ *Includes MicroMirrors*
- ▶ *High stability microscope designed for nanoscopy*
- ▶ *Most versatile microscope*



Above: RM21™ Advanced Microscope optical pathway for CoSMoS method

Additional Notes

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

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

Side breadboards compatible with SM1/30mm. ‡Compatibility with 60mm cage system available as an option.

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

User must specify parfocal distance of lens at time of order.

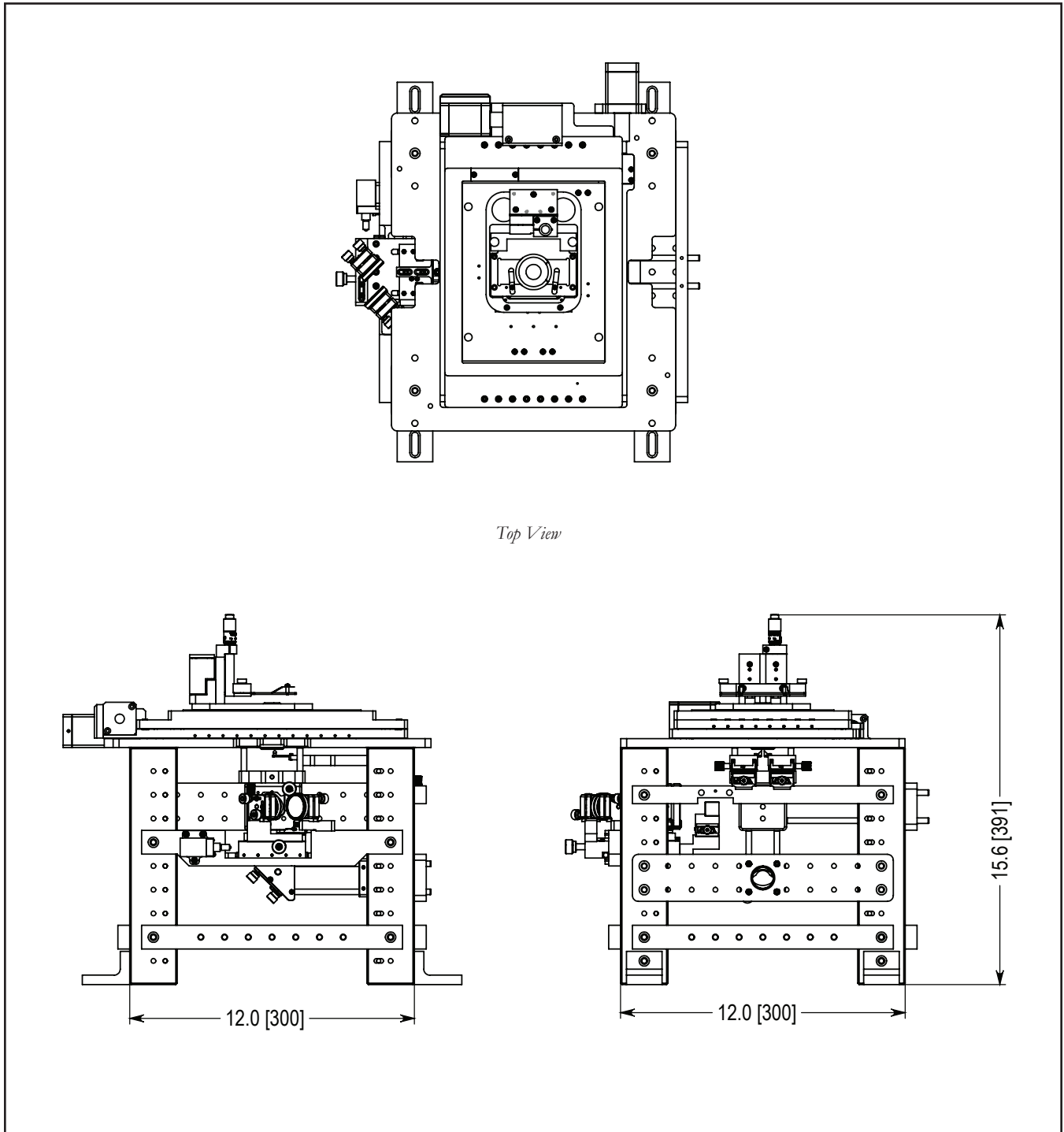
† Applications require additional options.

¹ Colocalization Single Molecule Spectroscopy (CoSMoS). See Hoskins et al., Science 331, pp1289-1295 (2011)

Available options

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

RM21™ Advanced Microscope



Top View

Dimensions (in inches) of the RM21 Advanced Microscope. Dimensions of the metric models shown in [].

Microscope Specifications






Micropositioning Axes	X, Y
Range of motion (XY)	25 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
Foot brackets.....	4
Body Material	Anodized Aluminum

Nanopositioning Specifications

Range of motion	200 x 200 x 200 µm
Resolution.....	0.4 nm
Resonant Frequencies	
X axis	270 Hz ±20%
Y axis	185 Hz ±20%
Z axis	110 Hz ±20%
Stiffness.....	1.0 N/µm
θ_{roll} , θ_{pitch} (typical).....	≤ 1 µrad
θ_{yaw} (typical).....	≤ 3 µrad
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.

Compatible Software Packages

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