



Welcome to New Scale News, your monthly update on micro-mechatronic systems and applications. This month we're pleased to feature two of our customers and their applications for miniature motion systems.



## M3-FS Focus Module excels in industrial robotics application

**Miniature focus system with embedded controller is successful in dynamic stability, vibration and lifetime testing**

An industrial equipment manufacturer has found the **M3-FS Focus Module** ideally suited for autofocus in a robotic end-of-arm vision system. Their testing shows the M3-FS to operate reliably under acceleration up to  $20\text{m/s}^2$  in the X, Y and Z axis, with its high dynamic stability minimizing pixel shift as the camera moves.

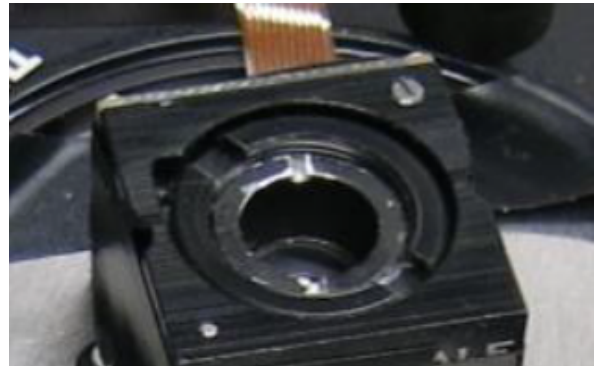
The vision system uses an M3-FS-1.8-1.5-M12 smart module with a commercial M12x0.5 8 mm diameter lens weighing 3.0 grams.

The module with lens and embedded controller measures only 20 x 23 x 16 mm. The embedded controller simplifies mounting of the vision system at the end of the robot arm. Vibration testing of the smart module was also successful.

Lifetime testing is ongoing and has exceeded 3 billion steps and 3 million complete up/down movements for a total travel of more than 1 mile... and counting.



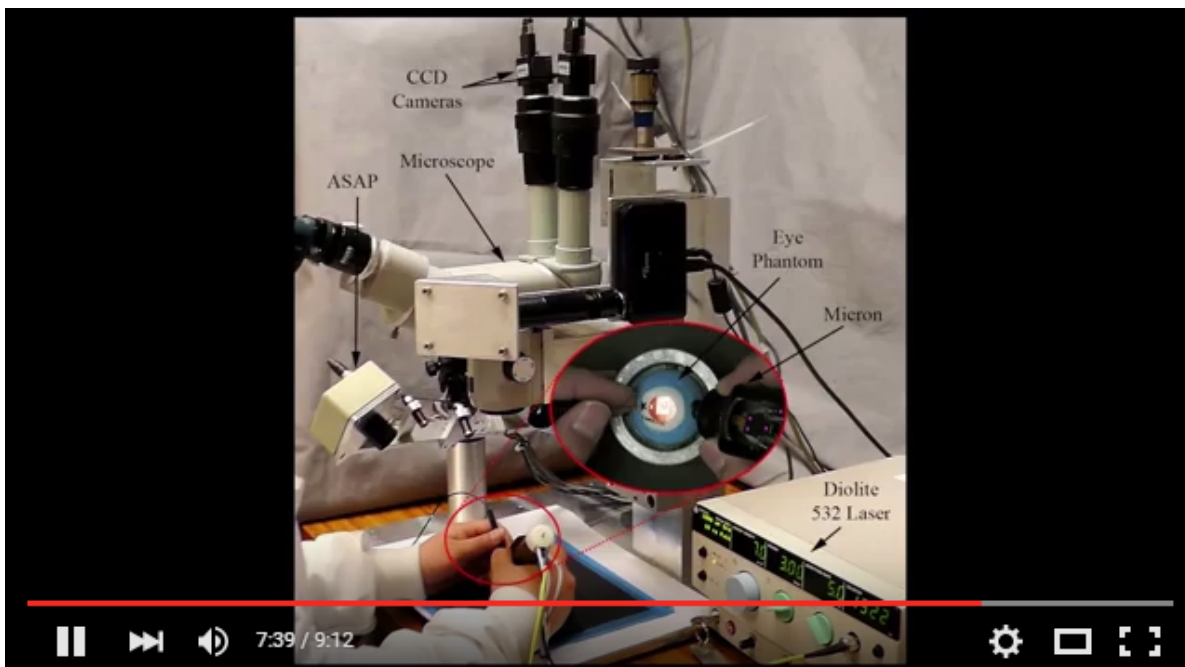
Miniature M3-FS Focus Module with embedded closed-loop controller inside



M3-FS Focus Module with commercial M12 lens



## Customer video Handshake stabilization in microsurgery

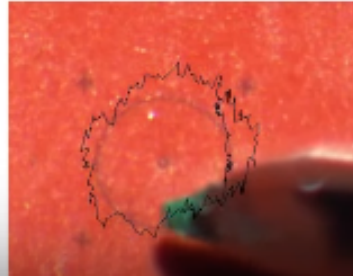
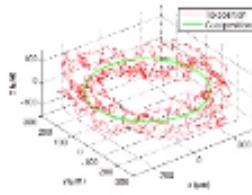


The Surgical Mechatronics Lab at the Carnegie Mellon University Robotics Institute demonstrates their "Micon" intelligent handheld instrument.

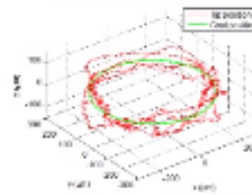
Using New Scale SQUIGGLE motors in a micro hexapod design, Micon improves microsurgery through active tremor cancellation for better control of a tool tip.

Applications shown in the CMU video are in vitro retinal surgery, handheld scanning for intraocular optical coherence tomography (OCT), and automated intraocular laser photocoagulation. [Watch the video \(3:32\)](#)

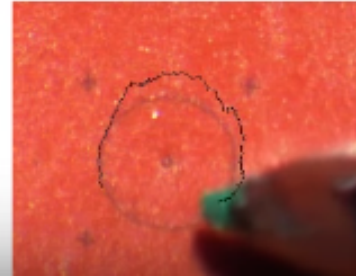
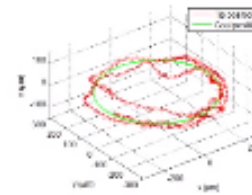
Unaided



Aided:  
Lowpass



Aided:  
Scaling



### Demonstration from the video

Using a handheld instrument to trace a 500 um diameter circle: unaided motion (left) compared to motion with the Micron tool using lowpass (center) or scaling (right) active cancelling algorithms to remove tremors.




## About Us

New Scale Technologies develops small, precise and smart motion systems for critical adjustments of optics, and many other micro positioning applications. Our simple and elegant solutions deliver best-in-class performance in handheld, portable and mobile instruments for medical, scientific and industrial applications. Our customers benefit from complete, "all-in-one" motion solutions that are tailored to their unique requirements and easily integrated into their next-generation instruments. [Contact us.](#)



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