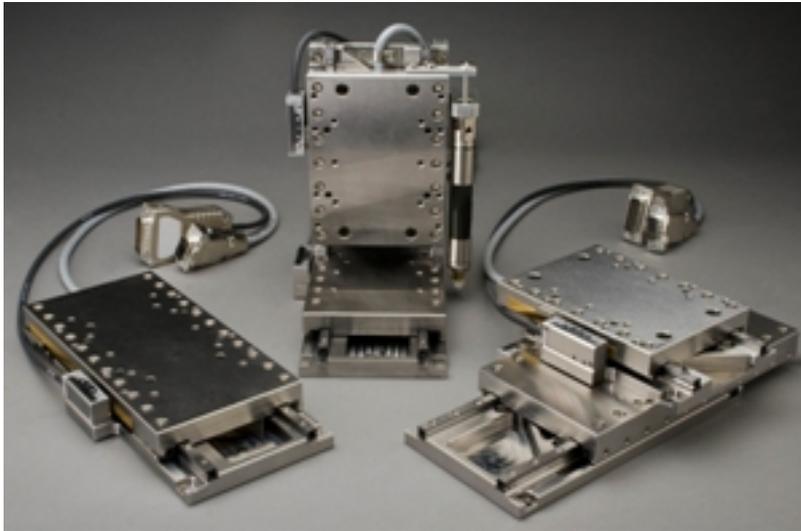


## Ultra-Compact Mini-Mag Stages



Mini-MAG (MMG) precision linear positioning stages from Dover are now available with a complete and optimized controls package. OEMs and end users can combine an MMG linear motor stage with a compact Dover board-level single axis servo drive for easy integration into a control cabinet, or a Kollmorgen AKD™ servo drive for single or multi axis applications with a graphical user interface for easy set-up and programming, and real time performance feedback. Both options provide Ethernet communication for fast data acquisition. Downloadable CAD files are available from the company's site for easy integration into customer models.

“Dover MMG stages combine the advantages of direct drive linear motor technology with a uniquely sized and extremely compact 81mm x 93mm footprint to deliver the ultimate motion building block for high throughput imaging applications,” says John Garrity, Inside Sales & Marketing Manager, Dover. “The MMG also delivers excellent mechanical and servo stiffness to optimize motion for the three basic phases of automated imaging applications – sample positioning, focal plane definition, and frame capture.”

MMG stages deliver nearly twice the accuracy at virtually the same cost as standard-grade options. They are available in aluminum-based versions with an optional single phase motor to reduce controller complexity, system footprint and cost. Technology enhancements also enable operation in a vertical orientation without requiring a counterbalance, functionality that is key for precision imaging applications where objective focus is critical to performance. Steel-based versions are also available for use in more demanding application environments.

For XY sample positioning, sustained throughput of up to 2,000 moves per minute is possible. For focal plane definition, the optimum Z position of the magnifying objective is determined, and the vertical objective positioning moves (<5um) are often accomplished in <20ms, which can occur in parallel with the XY positioning motion. During frame capture, in-position stability is vital to producing quality

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images, and MMG provides position stability typically less than 100nm.

Mini-Mag Stages deliver nearly twice the accuracy at virtually the same cost as competitive standard-grade options. The MMG's no moving cable design provides greater machine uptime for OEMs or end users in production environments. Dover's ability to quickly deliver MMG prototypes rapidly accelerates the proof-of-concept phase of an instrument under development.

Four options, with 25 mm, 50 mm 100 mm or 150 mm travel, are currently available. The MMG provides uncompensated accuracy ranging from 3 um to 6 um and analog or digital encoder resolution options ranging from 1.0 micron down to 1 nanometer. Each model is capable of repeatability to  $\pm 0.4$  um (with 0.1 um or better encoder) and is rated for 10kg load capacity.

One of the Mini-Mag's most significant features is an Integral anti-creep linear guideway. This can increase uptime by as much as 15% in high duty cycle applications by eliminating the need for homing moves typically required to reset standard crossed roller bearing retainer cages. These linear stages also feature adjustable limits to reduce the time needed to make changes to stage travel, thus reducing prototype development time and system startup costs by up to 10%.

An integrated advanced feedback mechanism enables exceptional uncompensated accuracy. This encoder minimizes the need for compensation tables or slope correction factors, thus lowering software and integration complexity as well as implementation time. Operation of the single phase MMG in a vertical orientation is possible with loads up to 200 g. Higher loads, up to 3.9 kg, can be accommodated with a standard "Z" axis counterbalance option kit.

MMG stages leverage Dover single and three-phase brushless motors to enable control with various standard drives and controllers, and deliver up to 20% greater throughput compared with piezo-driven actuators. No specialized piezo or proprietary motor/drive control technology is necessary.

The MMG stage can be used in constant velocity (CV) or high throughput point-to-point applications, allowing common units to be used. For OEMs, this lowers Bill-of-Material (BOM) costs while reducing and simplifying their unique parts count. Their precise performance, short lead times and lower cost of ownership make them ideally suited for use in life science and clinical diagnostic instruments. They are also well suited for use in OEM Metrology and inspection applications and photonics/laser machining applications.

### Dover

800-227-1066; [www.miniature-linear-stage.com](http://www.miniature-linear-stage.com) [1]

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[1] <http://www.miniature-linear-stage.com>