Voice-Coil Direct Drive with Integrated Linear Encoder:   
Highly Dynamic Linear Stage for Scanning Applications

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**Magnetic direct drives have advantages over the classical motorized, spindle-based solutions in particular with respect to wear and dynamics. Since direct drives largely dispense with moving parts in the drivetrain, there is less friction and play, and therefore more precision. At the same time, costs are lower and energy efficiency increases. In addition, their outstanding features include relatively large travel ranges, high velocities as well as longer lifetimes of the drives. In the case of linear stages for high-velocity industrial scanning applications, PI (Physik Instrumente), as solution supplier for drive technology and positioning systems, therefore makes use of magnetic direct drives.**

With the PIMag® V-522, V-524 and V-528 ranges, there are now new ultracompact linear stages, which reach the highest velocities up to 250 mm/s and scanning frequencies of some 10 Hz. The friction-free drive works with travel ranges from 5, 10 or 20 mm and is particularly suitable for applications in industry and research that require 24/7 operation, for example, in metrology, photonics, for image stabilization systems as well as in semiconductor and flat-screen inspection.

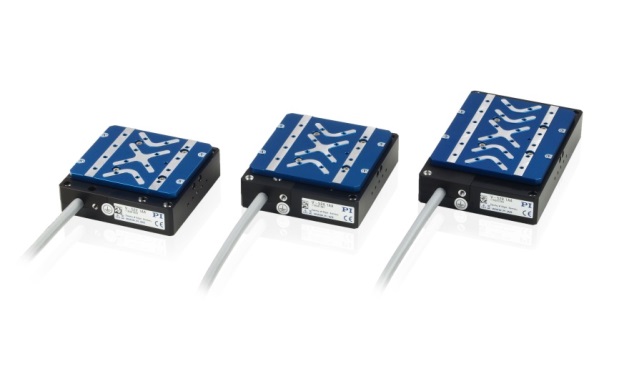
Thanks to its crossed roller guides, the linear stage attains a travel accuracy of 1 µm. Cage creep is also reliably prevented (anti creep). The linear stage is connected to the controller via a single cable, which includes both the power and the encoder signal. This ensures easy and space-saving integration into customer systems. The integrated, direct-measuring, optical linear encoder allows a reliable position control and repeatability of ±500 nm.

The sensor resolution is less than 10 nm; the minimum incremental motion is 20 nm. Depending on the version, the Voice-Coil Direct Drive series has a travel range of 5, 10 or 20 mm and is also only 80 mm in width and 26 mm in height. If required, it is also possible to com-bine linear stages without spacer plates to multi-axis systems. On the basis of the PIMag® standard linear stages, PI is able to offer customized single- and multi-axis solutions, which can be adapted exactly to the application with respect to force, accuracy and foot-print.

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About PI

Well-known for the high quality of its products, PI (Physik Instrumente) is one of the leading players in the global market for precision positioning technology for many years. PI has been developing and manufacturing standard and OEM products with piezo or motor drives for 40 years. In addition to four locations in Germany, the PI Group is represented internationally by fifteen sales and service subsidiaries.



Highly dynamic linear stage series for scanning applications

For more information, refer to:

<http://www.physikinstrumente.com/product-detail-page/v-522-v-524-v-528-1200206.html>

Video on the technology: <https://www.youtube.com/watch?v=hX6lSAvjqms>