Short Lead Time: The V-308 Voice Coil PIFOC — A Highly Dynamic Autofocus Solution for High-Tech Applications

PRESS CONTACT

Markus Wiederspahn

Phone +49 721 4846-1819

presse@pi.de

Physik Instrumente (PI)

SE & Co. KG  
Auf der Römerstraße 1  
76228 Karlsruhe, Germany  
[www.pi.ws](https://www.physikinstrumente.com/en/)

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Many highly specialized applications such as multiphoton fluorescence microscopy, genome sequencing, and wafer inspection require high-precision and dynamic vertical positioning systems with a long travel range. With the V-308 Voice Coil PIFOC, PI (Physik Instrumente) offers a quickly available solution that provides high velocity and precision as well as simple integration.

The V-308 PIFOC consists of a single-axis carriage with a lateral crossed roller guide that is driven by a centrally positioned PIMag voice coil motor. This motor is designed for highly dynamic applications facilitating accelerations of up to 8 m/s² and a maximum velocity of 200 mm/s. That enables the implementation of step-and-settle times of less than 15 msec for 100 nm and step sizes of 250 nm, which supports rapid focusing and data acquisition as well as high productivity. Such precision is achieved by means of the high-resolution optical PIOne linear encoder. This makes possible minimum incremental motions of 10 nm and a bidirectional repeatability of 25 nm with a travel distance of 100 nm. Position measuring is performed directly on the moving platform, so that nonlinearity, mechanical play, and elastic deformation do not have any influence on position measuring.

Compact design for simple integration

With dimensions of 87 x 77 x 30 mm (H/W/D), the V-308 PIFOC can be integrated easily into various systems. Mounting on optical benches or breadboards with metric or inch-based patterns is made possible by an adapter plate. Various objective holders for horizontal or vertical mounting and a set of adapter rings are optionally available.

Optimized for autofocus applications

Right from the start, the V-308 PIFOC was designed for autofocus and high-velocity focusing applications. A fast response time makes it suitable for automated inspection processes, high-resolution imaging, and laser-based materials processing.

Wide range of potential applications in high-tech areas

The V-308 PIFOC is suitable for numerous demanding applications in science and industry. In the field of microscopy, for example, it is used for multiphoton fluorescence microscopy, deep tissue inspection, and digital slide scanning microscopy. In the area of biotechnology, this positioning system is deployed in genome sequencing using the Solexa/Illumina method as well as in immunoassay fluorescence procedures. Medical technology is another area in which the V-308 PIFOC offers advantages, including in laser scanning ophthalmoscopy. Over and above this, the V-308 PIFOC plays an important role in the semiconductor sector. In this industry, it is deployed in wafer and semiconductor inspection.



The V-308 Voice Coil PIFOC autofocus positioning solution from PI for demanding microscopy and other industrial applications

Physik Instrumente (PI) in brief

PI with headquarters in Karlsruhe, Germany, is the market and technology leader for high-precision positioning technology and piezo applications in the market segments of Industrial Automation, Photonics, Semiconductor, and Microscopy & Life Sciences. Working closely with customers around the world, PI’s more than 1,700 specialists have been continuously pushing the boundaries of what is technically feasible for more than fifty years. Various drive technologies, internally developed sensor technology, electronics, and control technology provide the basis for this. PI’s portfolio ranges from components to subsystems to tailor-made complete solutions. More than 560 granted and pending patents underline the company’s claim to leadership in the fields of precision positioning and piezo technology. PI operates on a global scale, with nine production sites in Europe, North America, and Asia, as well as sixteen sales and service subsidiaries.

For more information, contact:

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