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A linear stage often is the key element in photonics, semiconductor and optics-related micro positioning and nano positioning applications. Typically, a nano positioning stageâ€™s precision is based on piezo drives and frictionless flexure linear guides. On the other hand, micro positioning stages often rely on servo or stepper motors coupled with cross roller bearings or linear bearings. Linear stages are considered to be very critical when it comes to restricting the movement of an object to single-axis motion.

â€¢ Linear stage characteristics for nano positioning applications:

There are several companies in the market that have carved a niche by creating precisely-engineered linear stages. While some industries can live with standard solutions, there are others that might need to opt for custom-made solutions. Either way, a reputable manufacturer has the ability to cater to both requirements professionally. For the highest accuracy requirements, piezo stage positioners and scanners are used. These are equipped with frictionless flexure guidance. These provide better resolution, reproducibility, straightness and flatness in comparison with positioners that have conventional guiding systems. These are also the most essential tools in the high-resolution microscopy sector. With the help of these piezo stages, scientists can achieve rapid response and sub-atomic resolution, which collectively translate into higher-quality images. Alternatively, they are also useful in systems relating to steering mirrors, Z-tip and tilt stages.

â€¢ Linear stage characteristics for micro positioning applications.

These days, miniature electromagnetic and ceramic motorized drives are available for the integration in rotary positioning stages, linear actuators, linear translation stages, multi-axis stages, goniometer stages and 6-axis hexapods. These all required high level skilled engineers and technician to design and manufacture. Often even the smallest inaccuracy could hinder the entire application from being successful. Hence, it is fundamentally imperative to purchase micro positioning system tools from a reputable manufacturer.

Whether you are opting for a precision motorized motion system, it is important to deal with a manufacturer with a proven track record. This ensures that you get accurate service and maintenance. The most common applications of linear stages include microscopy, material testing, quality control and metrology. Alternatively, they are used in any other application wherein an object needs to be positioned and tested under a controlled environment.

Keeping all these applications in mind, it is important to choose a linear stage that offers ultra-smooth movement and precise motion control which requires the use of low friction components.

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