

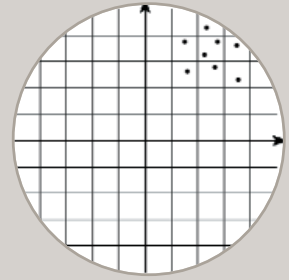
Resolution, Accuracy and Repeatability

Accuracy — For a specific point of interest in three-dimensional space, accuracy is the difference between the actual position in space and the position as measured by a measurement device. Stage accuracy is influenced by the feedback mechanism (linear encoder, rotary encoder, laser interferometer), drive mechanism (ball screw, lead screw, linear motor), and trueness of bearing ways. The measurement reference for Aerotech linear products is a laser interferometer.

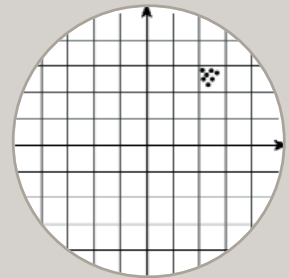
Repeatability — Repeatability is defined as the range of positions attained when the system is repeatedly commanded to one location under identical conditions. Uni-directional repeatability is measured by approaching the point from one direction, and ignores the effects of backlash or hysteresis within the system. Bi-directional repeatability measures the ability to return to the point from both directions. Many vendors specify repeatability as \pm (resolution). This is the repeatability of any digital servo system as measured at the encoder. All of Aerotech's specifications, which include the effects of Abbe error, friction, etc. are based on actual operating conditions and usage – not on theoretical, unachievable values.

Resolution — The smallest possible movement of a system. Also known as step size, resolution is determined by the feedback device and capabilities of the motion system. Theoretical resolution may exceed practical resolution. For example, in a ball-screw-based positioning system, a theoretical resolution of 4 nm can be obtained by combining a 4 mm/rev screw, 1000-line encoder, and an x1000 multiplier. The actual motion system will never be able to make a single 4 nm step due to friction, windup, and mechanical compliance. Therefore, the practical resolution is actually less. All of Aerotech's specifications are based on practical resolution.

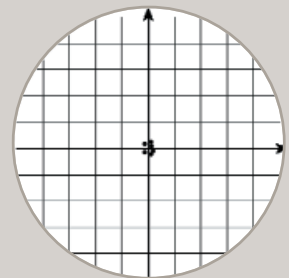
*Low Accuracy
Low Repeatability*



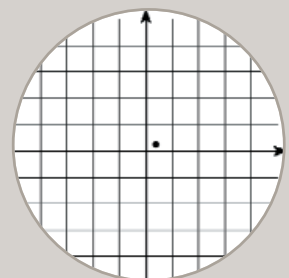
*Low Accuracy
High Repeatability*



*High Accuracy
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Fine Resolution



Coarse Resolution

