

# High-Precision and Reliability Motorized Actuator

VP-25AA



Newport's VP-25AA 25 mm travel actuator offers the highest accuracy and repeatability for the most demanding positioning applications.

## Single Rail Linear Stage Applications

The VP-25AA's actuator top rail can be used as a single-rail linear stage to position small and light weight parts with the optional 561-RAIL rails. It can be used to position optical fibers, micro-optics, sensors, or other small and lightweight parts. For added versatility, a mounting interface for a dovetail rail compatible with the popular ULTRAlign™ positioning system is provided. This system offers a wide selection of interchangeable mounts for optical fibers, fiber arrays, objectives, or GRIN lenses in a variety of fiber alignment applications.

## Non-Rotating Tip

The non-rotating tip is essential to eliminate undesirable periodic motion variations caused by the variable contact made between the actuator tip and the mating surface.

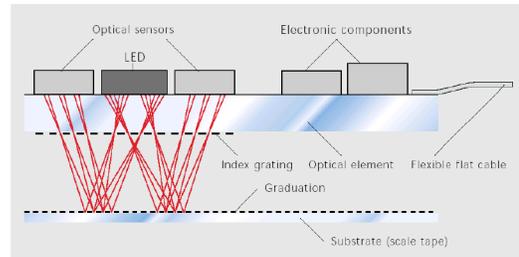


The VP-25AA actuator as a single-rail linear stage to position small and light weight parts with the optional 561-RAIL rails.

## Integrated Linear Encoder

The VP-25AA is based on the same innovative design used in the VP-25XA linear stages and features a high-resolution linear scale encoder for exceptional repeatability and accuracy. The scale is fixed on a moving rail to which the actuator's tip is permanently attached without any contact to the mounting shaft. This

concept eliminates all drivetrain induced motion errors and minimizes hysteresis between the scale and the actuator tip.



## Features and Benefits

- Integrated linear encoder for exceptional repeatability and accuracy
- Non-rotating tip to eliminate periodic motion variations
- Can be used as a single rail linear stage
- Very low friction design for high sensitivity with 0.1 μm MIM
- Convenient manual adjustment knob

## Design Details

Base Material	Aluminum
Bearings	Recirculating ball bearings
Drive Mechanism	Backlash-free ball screw
Drive Screw Pitch	1 mm
Feedback	Linear steel scale, 20 $\mu\text{m}$ signal period, 0.1 $\mu\text{m}$ resolution
Limit Switches	Optical
Origin	Optical, at center of travel, including mechanical zero signal
Motor	DC Servo
Cable Length	1.5 m

## Specifications

Travel Range (mm)	25 mm
MIM ( $\mu\text{m}$ )	0.1 $\mu\text{m}$
Uni-directional Repeatability, Typical (Guaranteed) <sup>(1)</sup> ( $\mu\text{m}$ )	$\pm 0.04$ (0.10) $\mu\text{m}$
Bi-directional Repeatability with Compensation, Typical (Guaranteed) <sup>(1)(2)</sup> ( $\mu\text{m}$ )	$\pm 0.2$ ( $\pm 0.30$ ) $\mu\text{m}$
Accuracy, Typical (Guaranteed) <sup>(1)(2)</sup> ( $\mu\text{m}$ )	$\pm 0.5$ ( $\pm 1.0$ ) $\mu\text{m}$
Maximum Speed (mm/s)	25 mm/s
Push force	40 N
MTBF	20,000 h

1) For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at [www.newport.com](http://www.newport.com)

2) Measured on a linear stage attached to the actuator.

## Recommended Controllers/Drivers

Model	Description
<b>XPS-Dx</b>	1- to 8-axis universal high-performance motion controller/driver
<b>XPS-DRV11</b>	Universal digital driver card for stepper, DC and direct motors
<b>XPS-RLDx</b>	1- to 4-axis universal high-performance motion controller/driver
<b>ESP302-xN</b>	1- to 3-axis motion controller/driver
<b>SMC100CC</b>	Single-axis stepper DC motor controller/driver

## Order Information

MODEL	DESCRIPTION
<b>VP-25AA</b>	High-Precision Motorized Actuator, 25 mm Travel Range
<b>ADAPT-BM17-375</b>	Motorized Actuator Adapter, UMR8 to VP-25AA, LTA-HS, TRA or PZA12
<b>ADAPT-BM25-375</b>	Motorized Actuator Adapter, UMR12 to VP-25AA, LTA-HS, or PZA12

## Accessories

Model	Description
<b>562-RAIL-3.7</b>	562 Dovetail Rail, 562F-TILT Stages
<b>61-RAIL-1</b>	Dovetail Rail, ULTRAlign Positioning System, 25.4 mm Length

## Dimensional Drawing

