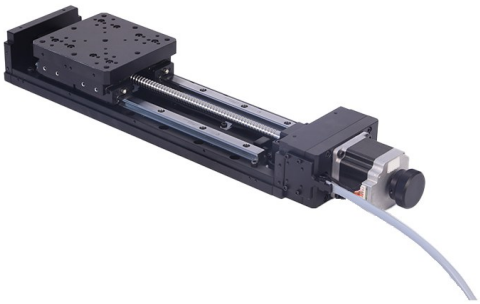
PA Series Precision Motorized Linear Stages, 50–1000 mm Travel, Ball Screw

Model PA Series · waveqvanta.com/products/pa-series-precision-motorized-linear-stages

Ball-screw motorized linear stages for medium table sizes and medium to long travel under heavy loads.



The PA series are precision motorized linear stages with medium-size tables and travel ranges from 50 mm to 1000 mm. A rigid U-section aluminum base, precision ball screw, linear-slider guides and a high-performance shaft coupling suit heavy-load and multi-axis setups in demanding environments. A two-phase stepping motor is standard; servo motors and a stainless-steel dust cover are available as options.

Key features

- U-section aluminum alloy base plate, precision machined and black anodized for high rigidity
- Precision-grade linear-slider guides for high load capacity and motion accuracy
- Precision ball screws: φ12 × 4 (PA050–PA200), φ16 × 5 (PA300–PA400), φ25 × 5 (PA600–PA1000)
- 1 µm or 1.25 µm resolution at 20 microsteps; minimum incremental motion ≤ 2 µm
- Horizontal load up to 80 kg; PAxx-Z versions are offered for vertical loads
- Two-phase 57 stepping motor standard; two-phase 42 stepping motor or AC servo motor optional
- Optional stainless-steel dust cover; sensors internal as standard or external left/right

Specifications

Travel Range	50–1000 mm (9 models)
Table Size	120 × 120 / 150 × 150 / 200 × 200 mm (by model)
Drive	Precision ball screw, φ12 × 4, φ16 × 5 or φ25 × 5
Guide	Linear-slider guides
Body	Black anodized aluminum alloy, U-section base
Full-Step Resolution	20 µm (PA050–PA200); 25 µm (PA300–PA1000)
Resolution (20 Microsteps)	1 µm (PA050–PA200); 1.25 µm (PA300–PA1000)
Max Speed	40 mm/s (PA050–PA200); 50 mm/s (PA300–PA1000)
Unidirectional Positioning Accuracy	≤ 30 µm (PA050–PA400); not specified for PA600–PA1000
Repeatability	≤ ±3 µm (PA050–PA400); ≤ ±5 µm (PA600–PA1000)
Static Clearance	≤ 3 µm
Backlash	≤ 5 µm
Minimum Incremental Motion	≤ 2 µm
Static Parallelism	≤ 0.1 mm (PA050–PA400); ≤ 0.12 mm (PA600–PA1000)
Motion Straightness	≤ 20 µm (PA050–PA200); ≤ 25 µm (PA300–PA400); ≤ 15 µm/100 mm (PA600–PA1000)
Motion Parallelism	≤ 25 µm (PA050–PA200); ≤ 30 µm (PA300–PA400); ≤ 15 µm/100 mm (PA600–PA1000)

Yaw	≤ 50 arcsec (PA050–PA400)
Pitch	≤ 55 arcsec (PA050–PA200); ≤ 60 arcsec (PA300–PA400)
Motor	Two-phase 57 stepping motor, 1.8°
Motor Current / Holding Torque	2.8 A / 1.44 N·m (PA050–PA400); 3.0 A / 1.57 N·m (PA600–PA1000)
Motor Options	Two-phase 42 stepping motor; Panasonic 100 W or Yaskawa 200 W AC servo motor
Limit / Origin Sensors	2 limit + 1 origin, built-in (external left/right optional)
Sensor Supply	5–24 V DC ±10%
Sensor Output	NPN open collector, 5–24 V DC, ≤ 8 mA; residual voltage ≤ 0.3 V at 2 mA
Output Logic	Limit sensors ON when blocked; origin sensor OFF when blocked
Connector / Cable	DB9 (pin); high-flex cable, 0.2 m
Shaft Coupling (OD / Bore 1 / Bore 2)	30 / 6.35 / 8 mm (PA050–PA400); 32 / 8 / 12 mm (PA600–PA1000)
Vertical Load	Use PAxx-Z models
Dust Cover	Optional stainless-steel cover (-C)

Model overview

Model	Travel (mm)	Table (mm)	Ball Screw	Res. 20 Microsteps (µm)	Max Speed (mm/s)	Repeatability (µm)	Load H / Inv. (kg)	Weight (kg)
PA050	50	120 × 120	φ12 × 4	1	40	≤ ±3	30 / 15	5.8
PA100	100	120 × 120	φ12 × 4	1	40	≤ ±3	30 / 15	6.2
PA150	150	120 × 120	φ12 × 4	1	40	≤ ±3	30 / 15	6.6
PA200	200	120 × 120	φ12 × 4	1	40	≤ ±3	30 / 15	7
PA300	300	150 × 150	φ16 × 5	1.25	50	≤ ±3	50 / 25	8.9
PA400	400	150 × 150	φ16 × 5	1.25	50	≤ ±3	50 / 25	9.9
PA600	600	200 × 200	φ25 × 5	1.25	50	≤ ±5	80 / 40	21.5
PA800	800	200 × 200	φ25 × 5	1.25	50	≤ ±5	80 / 40	25
PA1000	1000	200 × 200	φ25 × 5	1.25	50	≤ ±5	80 / 40	28.4

Typical applications

- Positioning of samples, optics and fixtures over long travel
- Multi-axis XY and XYZ stage assemblies
- Heavy-load positioning in automation equipment
- Inspection and measurement systems