PSAV Series Long-Travel Motorized Vertical Stages, 50–400 mm, up to 200 kg

Model PSAV Series · waveqvanta.com/products/psav-series-long-travel-motorized-vertical-stages

Long-travel, high-load motorized Z stages for optical experiments, fine positioning and precision processing.



PSAV series stages lift loads through a ball screw reducer, which has much smaller backlash than a trapezoidal screw reducer and supports very high payloads. Four linear bearing guides keep the 240 × 240 mm aluminum table running smoothly, and five models cover 50 to 400 mm of vertical travel. A two-phase 57 stepping motor with high holding torque drives the stage, with rated loads from 200 kg (50 mm travel) to 100 kg (400 mm travel).

Key features

- φ40 × 5 ball screw reducer with 4:1 reduction for high load capacity and low backlash
- Four linear bearing guides for stable, smooth vertical motion
- Travel from 50 mm to 400 mm on a common 240 × 240 mm table
- Rated load from 200 kg (PSAV50-240ZF) to 100 kg (PSAV400-240ZF)
- Two-phase 57 stepping motor, 1.8°, 2.4 A, 1900 mN·m holding torque
- Two built-in limit sensors with dry-contact output; DB9 connector

Specifications

Travel Range	50 / 100 / 200 / 300 / 400 mm (by model)
Table Size	240 × 240 mm
Drive	φ40 × 5 ball screw reducer, 4:1 reduction ratio
Motor Orientation	Horizontal drive (ZF suffix)
Guide	4 × linear bearing guides
Body	Black anodized aluminum alloy
Resolution (Full / Half Step)	6.25 / 3.125 µm
Resolution (8 Microsteps)	0.781 µm
Max Speed	12.5 mm/s (zero load, motor at 600 rpm)
Motor	Two-phase 57 stepping motor, 1.8° step angle
Motor Current	2.4 A
Holding Torque	1900 mN·m
Stepping Driver	Optional
Connector	DB9 (pin)
Limit Sensors	2 × built-in
Sensor Supply	DC 5–24 V ±10%
Sensor Output	Dry contact; ON when sensor is triggered
Max Load	100–200 kg (decreases with travel, see table)
Weight	14–28 kg
Power-Failure Protection	Protector must be switched on before the motor runs
Loads Over 50 kg	Time-delay protection circuit must be added

Model overview

Model	Travel (mm)	Max Load (kg)	Weight (kg)
PSAV50-240ZF	50	200	14
PSAV100-240ZF	100	180	16
PSAV200-240ZF	200	150	20
PSAV300-240ZF	300	120	24
PSAV400-240ZF	400	100	28

Typical applications

- Optical experiments needing long vertical travel
- Fine positioning of heavy payloads
- Precision processing and machining setups
- Lifting platforms for test and measurement equipment