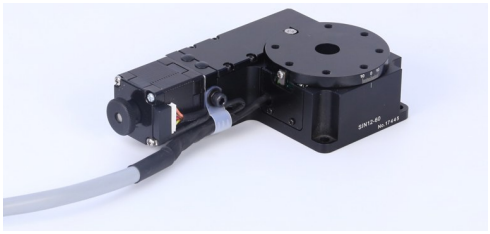
SIN Series Sinusoidal Motorized Rotation Stages, ±6° to ±9° Range

Model SIN Series · waveqvanta.com/products/sin-series-sinusoidal-motorized-rotation-stages

Compact small-angle rotation stages with a sine mechanism for fast, repeatable reciprocating motion.



The SIN series converts the motion of a 1 mm lead ball screw into small-angle rotation through a precision sinusoidal mechanism, giving low backlash and high repeatability in a compact package. Linear slider guides carry the translating element, a pair of angular contact ball bearings supports the rotary table, and the body is rigid black anodized aluminum. The stages suit automation equipment and precision instruments with tight space and weight limits, as well as production lines with short, high-frequency reciprocating moves.

Key features

- Sinusoidal mechanism for precise, high-frequency reciprocation over ±9° (SIN18-40) or ±6° (SIN12-60)
- Small-pitch φ6 × 1 mm ball screw: ≈0.0009° (SIN18-40) or ≈0.00055° (SIN12-60) resolution at 20 microsteps
- Precision linear slider guides on precision-machined guide surfaces
- Pair of angular contact ball bearings: axial runout ≤ 5 µm, radial runout ≤ 10 µm
- Repeatability ≤ ±0.005° and reverse clearance ≤ 0.01°
- Two built-in limit sensors; DB9 connector with 0.2 m high-flex cable

Specifications

Angle Range	±9° (SIN18-40); ±6° (SIN12-60)
Table Diameter	Φ39 mm (SIN18-40); Φ60 mm (SIN12-60)
Table Thickness	35 ± 0.1 mm
Drive	Ball screw φ6 × 1 with sinusoidal mechanism
Guides	Linear slider guides (translation); pair of angular contact ball bearings (rotation)
Body	Black anodized aluminum alloy
Repeatability	≤ ±0.005°
Reverse Clearance	≤ 0.01°
Static Parallelism	≤ 0.08 mm
Axial Runout	≤ 5 µm
Radial Runout	≤ 10 µm
Motor	Two-phase 28 stepping motor, 1.8° step angle
Motor Current	1.3 A
Holding Torque	78.5 mN·m
Stepping Driver	Optional
Connector	DB9 (pin)
Connection Cable	High-flex cable, 0.2 m
Limit Sensors	2 × built-in
Origin Sensor	None

Sensor Supply	DC 5–24 V ±10%
Sensor Output	NPN open collector, DC 5–24 V, ≤ 8 mA; residual ≤ 0.3 V at 2 mA; ON when blocked
Max Load (Horizontal)	4 kg (SIN18-40); 6 kg (SIN12-60)

Model overview

Model	Angle Range	Table Dia. (mm)	Full / Half Step (°)	20-Microstep Res. (°)	Min. Incremental Motion (°)	Max Speed (°/s)	Max Load (kg)	Weight (kg)
SIN18-40	±9°	Φ39	≈0.0179 / 0.009	≈0.0009	≤0.0179	35.8	4	0.35
SIN12-60	±6°	Φ60	≈0.011 / 0.0055	≈0.00055	≤0.011	22	6	0.5

Typical applications

- Small-angle tilt and rotation in automation equipment
- Precision instruments with limited space
- High-frequency reciprocating motion on production lines
- Fine angle tuning of optical components