XYR Series Motorized XYθ Alignment Stages, ±4.5 to ±15 mm XY, ±5° Rotation

Model XYR Series · waveqvanta.com/products/xyr-series-motorized-xy-alignment-stages

Three-axis parallel XYθ stages for repeated high-precision alignment, bonding and fitting on production lines.



The XYR series are three-axis parallel alignment stages that provide X, Y and θz motion for high-precision, high-repetition alignment, bonding and fitting of workpieces in production. Each stage consists of four module sets between the top plate and the base, guided by crossed-roller guides and crossed-roller bearings; the three driven modules use fine-lead ball screws and stepping motors. A rectangular center aperture makes the stages suitable for transmission-type applications.

Key features

- Parallel XYθz kinematics: ±4.5, ±10 or ±15 mm XY travel and ±5° rotation
- Fine-lead φ8 × 2 ball screws with two-phase stepping motors; 0.5 µm XY resolution at 20 microsteps
- Crossed-roller guides and crossed-roller bearings for motion accuracy
- Modular design with standardized parts for uniform components and shorter delivery times
- Rectangular center aperture for transmission-type alignment
- Two-phase stepping motors standard; five-phase stepping or servo motors optional
- Multi-axis motion algorithms and formulas available; control software optional

Specifications

XY Travel	±4.5 mm (XYR150210); ±10 mm (XYR200230); ±15 mm (XYR300400-CH)
θz Rotation Range	±5°
Table Size	150 × 150 / 200 × 200 / 300 × 300 mm (by model)
Base Size	210 × 210 / 230 × 230 / 400 × 400 mm (by model)
Overall Height	62.5 / 76 / 98 mm (by model)
Drive	Precision ball screw, φ8 × 2
Guide	Crossed-roller bearing guides
Body	Black anodized aluminum alloy
XY Resolution (Full / Half Step)	10 / 5 µm
XY Resolution (20 Microsteps)	0.5 µm
Repeatability	≤ ±3 µm
Max Speed	20 mm/s
Static Parallelism	≤ 0.03 / 0.04 / 0.05 mm (by model)
Motion Parallelism	≤ 20 / 20 / 30 µm (by model)
Motor	Two-phase stepping motor, 1.8°: 28 frame (XYR150210), 42 frame (other models)
Motor Current / Holding Torque	1.3 A / 0.0785 N·m (XYR150210); 1.7 A / 0.456 N·m (other models)
Sensors per Axis	2 limit + 1 origin, built-in

Sensor Supply	5–24 V DC ±10%
Sensor Output	NPN open collector, 5–24 V DC, ≤ 8 mA
Output Logic	ON when sensor is blocked
Connector / Cable	1 × DB9 (pin); high-flex cable, 0.2 m
Motion Algorithms	Multi-axis motion algorithms and formulas available
Control Software	Optional
Max Load (Horizontal)	20 / 30 / 50 kg (by model)

Model overview

Model	XY Travel (mm)	θz Range (°)	Table (mm)	Base (mm)	Height (mm)	Static Parallelism (mm)	Motion Parallelism (μm)	Max Load (kg)	Weight (kg)
XYR150210	±4.5	±5	150 × 150	210 × 210	62.5	≤ 0.03	≤ 20	20	6
XYR200230	±10	±5	200 × 200	230 × 230	76	≤ 0.04	≤ 20	30	8
XYR300400-CH	±15	±5	300 × 300	400 × 400	98	≤ 0.05	≤ 30	50	15

Typical applications

- Alignment of workpieces on production lines
- Bonding and fitting of components
- Transmission and reflection alignment
- Positioning tasks that need θz rotational correction