CXP and CXPF Series Motorized Linear Stages, 15–100 mm Travel, Crossed-Roller

Model CXP / CXPF Series · waveqvanta.com/products/cxp-and-cxpf-series-motorized-linear-stages

Compact crossed-roller linear stages with fine-lead ball screws for high-cycle positioning in tight spaces.



The CXP series are compact motorized linear stages for small installation spaces and high-frequency operation. A 1 mm lead ball screw, a two-phase stepping motor and crossed-roller guides give small incremental steps and high positioning accuracy even under load, on a hard black-anodized aluminum alloy body. The CXPF versions use a 2 mm lead screw, a 42-frame motor and longer tables for faster motion, higher rigidity and travel up to 100 mm.

Key features

- Fine-lead ball screws: φ6 × 1 (CXP) or φ8 × 2 (CXPF), driven by two-phase stepping motors
- Crossed-roller guides for rigidity and horizontal loads up to 30 kg
- Mounting surface finished by fine grinding; motion straightness ≤ 10 µm, motion parallelism ≤ 15 µm
- Repeatability ≤ ±1.5 µm (≤ ±2 µm on CXPF75-80125 and CXPF100-80175)
- 0.25 µm (CXP) or 0.5 µm (CXPF) resolution at 20 microsteps
- Three built-in sensors (positive limit, negative limit, origin) with high-flex cable for easy maintenance
- Five-phase stepping motor optional

Specifications

Travel Range	15–100 mm (6 models)
Table Size	40 × 40 mm to 80 × 175 mm (by model)
Drive	Ball screw, φ6 × 1 (CXP) or φ8 × 2 (CXPF)
Guide	Crossed-roller bearing guides
Body	Black anodized aluminum alloy
Resolution (Full / Half Step)	5 / 2.5 µm (CXP); 10 / 5 µm (CXPF)
Resolution (20 Microsteps)	0.25 µm (CXP); 0.5 µm (CXPF)
Max Speed	10 mm/s (CXP); 20 mm/s (CXPF); zero load, motor at 600 rpm
Repeatability	≤ ±1.5 µm (CXP15-40 to CXPF50-80100); ≤ ±2 µm (CXPF75-80125, CXPF100-80175)
Backlash	≤ 3 µm
Static Parallelism	≤ 0.08 mm (CXP15-40 to CXPF50-80100); ≤ 0.1 mm (CXPF75-80125, CXPF100-80175)
Motion Straightness	≤ 10 µm
Motion Parallelism	≤ 15 µm
Minimum Incremental Motion	≤ 5 µm (CXP); ≤ 2 µm (CXPF)
Minimum Incremental Motion, Controller Note	≤ 2 µm with TMC controller; ≤ 5 µm with other controllers
Motor	Two-phase stepping motor, 1.8°: 28 frame (CXP), 42 frame (CXPF)
Motor Current	1.3 A/phase (CXP); 1.7 A/phase (CXPF)
Motor Holding Torque	0.0785 N·m (CXP); 0.456 N·m (CXPF)

Motor Insulation	Above 100 MΩ; 500 V AC for 1 min without fault; class B
Operating Temperature	0–50 °C (motor max. 80 °C)
Limit / Origin Sensors	2 limit + 1 origin, built-in
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	ON when sensor is blocked
Connector / Cable	DB9 (pin); high-flex cable, 0.2 m
Shaft Coupling (OD / Bore 1 / Bore 2)	16 / 3 / 5 mm (CXP); 16 / 5 / 5 mm (CXPF)
Motor Option	Five-phase stepping motor

Model overview

Model	Travel (mm)	Table (mm)	Ball Screw	Res. 20 Microsteps (µm)	Max Speed (mm/s)	Repeatability (µm)	Min. Increment (µm)	Load H / V / Inv. (kg)	Weight (kg)
CXP15-40	15	40 × 40	φ6 × 1	0.25	10	≤ ±1.5	≤ 5	5 / 2 / 3	0.4
CXP20-60	20	60 × 60	φ6 × 1	0.25	10	≤ ±1.5	≤ 5	8 / 3 / 4	0.6
CXPF30-80	30	80 × 80	φ8 × 2	0.5	20	≤ ±1.5	≤ 2	16 / 5 / 5	1.2
CXPF50-80100	50	80 × 100	φ8 × 2	0.5	20	≤ ±1.5	≤ 2	20 / 6 / 5	1.4
CXPF75-80125	75	80 × 125	φ8 × 2	0.5	20	≤ ±2	≤ 2	25 / 7 / 5	1.6
CXPF100-80175	100	80 × 175	φ8 × 2	0.5	20	≤ ±2	≤ 2	30 / 8 / 5	1.8

Typical applications

- Automation equipment with limited installation space
- Compact precision instruments
- High-cycle short-stroke positioning
- Fiber, probe and small-optic alignment