Intelligent Stepper Motor Rotary Stage

The economical FCR Series of rotary stages separates itself with a built-in plug-and-play stepper motor controller and driver, while maintaining good in-position and speed stability.

**Daisy-Chain up to 4 FC Units**

With a RS-422 interface, the FC series is equipped to easily daisy-chain and synchronize communication with up to 4 stages.

**Robust Design**

The optimized aluminum body allows for extreme stiffness without compromising weight. The rigid body reduces deflection under load. Features of the FEM-Optimized FCR100 includes: robust construction of crossed roller bearing for high position accuracy and the stepper motor directly attached to the worm screw providing high output torque.

**Built-In Stepper Motor Controller with iPP Technology**

The FCR’s design brings together a rotary stage with a built-in controller and driver for easy integration. Not only is the controller pre-configured with intelligent stepper motor technology, iPP, the stage is ready for plug-and-play via USB connection. The built-in controller eliminates the need for an external controller and cables, thus saving work-space and cost.

- Built-in stepper motor controller with iPP technology, eliminating external controller or driver integration
- Fully pre-configured with USB communication and enables out-of-the-box control
- Up to 4 FC units can be daisy-chained and controlled with the same GUI or multiple units via USB hub or RS-422 interface
- Most economical stage available without compromising MIM
- Stepper motor provides more torque and better speed stability at low speeds

**Metrology Report Included at No Additional Cost**

Newport guarantees specification values which are measured and recorded following ASME B5.57 and ISO 230-2 standards. The typical performance values are two times better than the guaranteed specifications.
FCR100
INTELLIGENT STEPPE MOTOR ROTARY STAGE

DESIGN DETAILS

- Base Aluminum
- Motor: iPP™ Intelligent stepper motor (2-phase step motor and controller/driver)
- Drive Mechanism: Ground worm gear
- Worm gear ratio: 1:200
- Bearing: Crossed roller bearings
- Limit Switches: None
- Origin: Optical
- Communication: RS422, USB (via adapter)
- Manual Adjustment: Via 2 mm socket screw at the end of the worm screw
- Cable: Cables and power supply sold separately. Refer to the next page for details

SPECIFICATIONS

- Travel Range (°): 360 continuous
- Minimum Incremental Motion (°): 0.00025
- Uni-directional Repeatability (°): ±0.001
- Bi-directional Repeatability, Guaranteed (°): ±0.008
- Absolute Accuracy, Guaranteed (°): ±0.04 or ±0.02
- Maximum Speed (°/s): 20
- Wobble, Guaranteed (°): 50 or ±0.25
- Eccentricity, Guaranteed (µm): 6 or ±3
- MTBF (h): 20,000 @ 100% duty, 80% max constant torque

* For the definition of Typical and Guaranteed specifications see “Motion Basics Terminology & Standards” Tutorial at www.newport.com

DIMENSIONS

- Load Characteristics and Stiffness

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LOAD CHARACTERISTICS AND STIFFNESS

- Cz, Normal center load capacity on bearing: 300 N
- kxx, Transversal compliance: 12 µrad/Nm
- Mz, Maximum torque: 0.5 Nm
- Jz, Maximum inertia: 0.1 kg.m²
- Q, Off-center load: Q ≤ Cz/(1 + D/30)
- D, Cantilever distance in mm

ORDERING INFORMATION

- Model: FCR100
- Description: Precision Rotation Stage, Stepper Motor, Continuous 360° Motion

ACCESSORIES

- Model: FC-CB1
  - Description: 1 m communication cable, daisy chain, RS422
- Model: FC-PS40
  - Description: Power supply, iPP step motor, RoHS
- Model: USB-RS422-1.8
  - Description: Cable adapter, USB to RS422, 1.8m

Use the FC-CB1 to daisy chain communication between axis.

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Newport Corporation, Irvine, California and Franklin, Massachusetts; Evry and Beaune-la-Rolande, France and Wuxi, China have all been certified compliant with ISO 9001 by the British Standards Institution. Santa Clara, California is DIN certified.