

# Intelligent Stepper Motor Rotary Stage

FCR100



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.

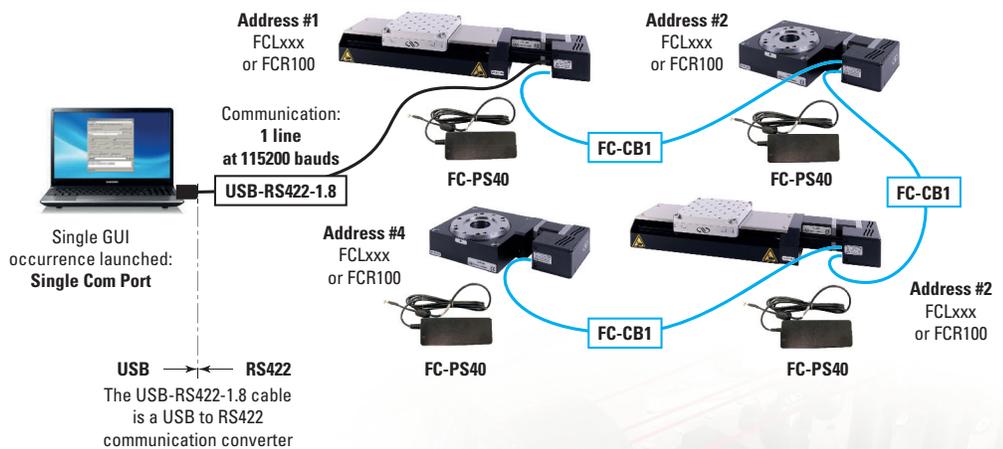
## Robust Design

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.

DESIGN DETAILS

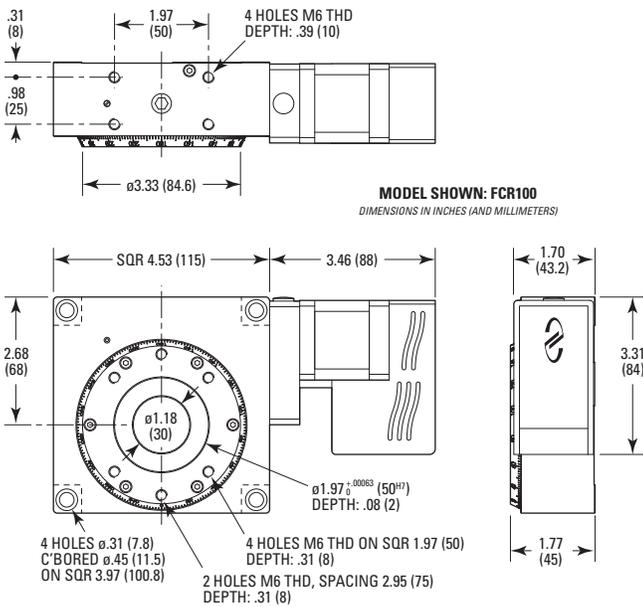
Base Aluminum	
Motor	iPP™ Intelligent stepper motor (2-phase step motor and controller/driver)
Drive Mechanism	Ground worm gear
Worm gear ratio	1:200
Bearing	Crossed roller bearings
Limit Switches	None
Origin	Optical
Communication	RS422, USB (via adapter)
Manual Adjustment	Via 2 mm socket screw at the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

SPECIFICATIONS

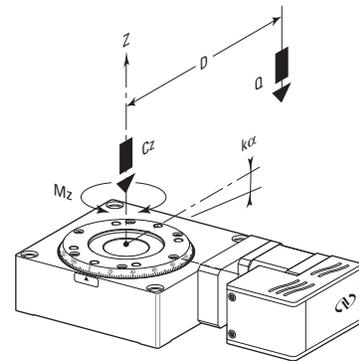
Travel Range (°)	360 continuous
Minimum Incremental Motion (°)	0.00025
Uni-directional Repeatability (°)	0.002 or ±0.001
Bi-directional Repeatability, Guaranteed <sup>(1)</sup> (°)	0.012 or ±0.006
Absolute Accuracy, Guaranteed <sup>(1)</sup> (°)	0.04 or ±0.02
Maximum Speed (°/s)	20
Wobble, Guaranteed <sup>(1)</sup> (μrad)	50 or ±25
Eccentricity, Guaranteed <sup>(1)</sup> (μm)	6 or ±3
MTBF (h)	20,000 @ 100% duty, 80% max constant torque

<sup>1)</sup> For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at [www.newport.com](http://www.newport.com)

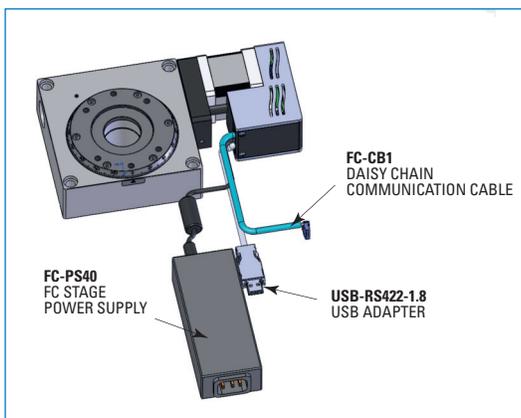
DIMENSIONS



LOAD CHARACTERISTICS AND STIFFNESS



Cz, Normal center load capacity on bearing	300 N
kα, Transversal compliance	12 μrad/Nm
Mz, Maximum torque	0.5 Nm
Jz, Maximum inertia	0.1 kg.m <sup>2</sup>
Q, Off-center load	$Q \leq Cz / (1 + D/30)$
D, Cantilever distance in mm	



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

ORDERING INFORMATION

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

ACCESSORIES

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



Newport Corporation, Global Headquarters  
1791 Deere Avenue, Irvine, CA 92606, USA

PHONE: 1-800-222-6440 1-949-863-3144 FAX: 1-949-253-1680 EMAIL: [sales@newport.com](mailto:sales@newport.com)

Complete listings for all global office locations are available online at [www.newport.com/contact](http://www.newport.com/contact)

[www.newport.com](http://www.newport.com)