



## CUSTOM PRODUCT

### M3-RS-3.4-U Rotary Smart Stage

All-in-one smart module with unmatched precision, no jitter

#### FEATURES

- **“All-in-one” custom stage** with built-in controller
- **High resolution and repeatability** with in-situ calibration
- **Low voltage & power:** 6 VDC input, zero-power position hold
- **Simple integration:** direct digital input via I<sup>2</sup>C, SPI or UART
- **High load capacity** with low friction and axis wobble
- **Lowest cost, fastest time to market**

#### APPLICATIONS

Add precision motion to miniaturized systems and portable instruments: with M3 modules, you can build them smaller, make them smarter, do it faster.

- Tuning gratings and filters
- Calibrating inertial sensors
- Aligning samples for microscopy

#### Custom motion system: small, precise and smart

The M3-RS-3.4-U Rotary Smart Stage is a **custom** “all-in-one” positioning stage with high precision and no measurable jitter. Piezo motors, position sensors, bearings, and drive electronics are all integrated into the 32-mm diameter stage. No external controller is needed! Inputs are 6 VDC and digital commands via UART, SPI or I<sup>2</sup>C.

The preloaded ball bearing spindle has a high load capacity with low friction and axis wobble. A clear aperture on the center line provides a convenient pass-through for twist wires or a slip ring.

Two UTAF™-style piezoelectric motors generate tangential force and high torque. They provide direct-drive actuation with no gears or backlash and hold position with zero power\* and no servo jitter.

Position changes due to external disturbances are highly damped. The piezo motors generate NO magnetic fields.

An optical glass scale encoder directly measures angular position. The incremental encoder with multiple reference marks ensures high resolution and repeatability with in-situ calibration for maximum accuracy.

#### Built-in controller for smart operation

The built-in controller features New Scale’s patented full-bridge drive technology for high efficiency at lower voltage. The embedded microprocessor with proprietary closed-loop control firmware accepts simple motion commands (e.g. MOVE, STEP, HOME) directly from the host processor over a standard serial interface. New Scale Pathway Software and a USB adapter enable users to control the stage from a PC for fast and flexible integration, operation and testing.

Specifications - PRELIMINARY	
Diameter	32 mm
Height	23 mm
Center Aperture Diameter	8 mm
Range	Continuous
Max. Payload Mass	150 g
Stall Torque	10 mNm
Holding Torque	20 mNm
Max. Velocity	360 deg/s
Encoder Resolution	0.0072 deg
Repeatability	<± 0.0072 deg
Accuracy	0.01 deg
Wobble	< 10 arc-s
Typical Power @ Max. Velocity	7 W
Power to Hold*	0 W
Input Voltage	6 VDC
Digital Input	UART, SPI or I <sup>2</sup> C
Controller	Built in no separate controller needed

\* Quiescent power of electronics is ~ 0.4 W

#### Ordering Information

This **custom** positioning stage can serve as the starting point for a *motion system feasibility study*, leading to faster, lower-risk product development for you. See <http://www.newscaletech.com/technology/custom-engineering.php>