



PIEZOMOTION



ELECTROMATE
Robotic and Mechatronic Solutions



Motion Products

Piezo Motion's novel series of linear and rotary piezoelectric motors represent a quantum leap in design construction of compact ultra-precision, high-performance motor technologies. Manufactured from modern lightweight reinforced engineering thermoplastics, the new range of piezoelectric motors combine superior nanometer precision with fast response at a very economical cost.

Extremely energy efficient, Piezo Motion's motors consume zero power in hold position while still providing significant force/torque. Available in a variety of configurations including both open-loop control (non-feedback control) and closed-loop control (feedback control) systems, these motors have extremely low voltage compliance (5 to 12 Vdc) and minimal energy demands, enabling miniaturization of associated drive electronics and cost-effective pricing.

Developed and manufactured by Piezo Motion, with custom options available upon request, this new series of rotary and linear motors are rapidly finding use in a growing number of motion control applications.

Discover **affordable precision** with piezoelectric **innovation**.

Linear Motors

RAPID RESPONSE TIME

At 10 to 30 microseconds for a typical motion response time, the piezomotor is >100X faster than a electromagnetic motor.

ULTRA HIGH RESOLUTION STEPS

With <50 nm step resolution the linear piezomotor is capable of an incredible 20,000 steps per mm of travel.

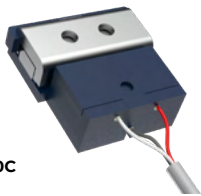
ENERGY EFFICIENT

With no command signal the piezomotor will hold position with zero power and a force >/= the maximum driving force.

LIGHTWEIGHT

Eliminating copper windings, magnets and ferrous laminations, enables a lightweight construction using engineering polymers.

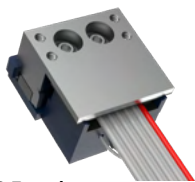
LAS Series



LAS20C

Ultra-lightweight (0.1 oz).
Extremely energy efficient.
Nanometer-level resolution: (<40 nm). Rapid response time: (10 to 30 μ s).
Low voltage with a 9 mm stroke.

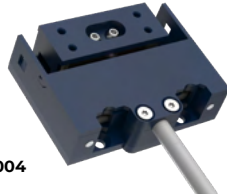
| | |
|----------------|--------------------|
| Force | >0.2 N |
| Velocity Range | 0 to 0.2 m/s |
| Min. Step | <0.04 μ m |
| Response | 10-30 μ sec |
| Travel Range | 10 mm |
| Temperature | -20° to +80°C |
| Driver Volts | 5 Vdc |
| Current | 100 mA |
| Weight | 4 g |
| Size | 16.3 x 15 x 5.7 mm |



LAS20C-Encoder

| | |
|----------------|------------------|
| Velocity Range | 0.01 to 100 mm/s |
| Min. Step | 34 μ m |
| Weight | 6 g |
| Size | 16.3 x 30 x 9 mm |

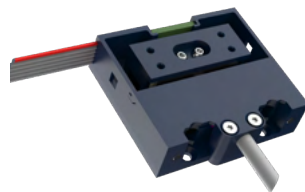
LBS Series



LBS004

Extremely lightweight (0.8 oz).
Energy efficient.
Nanometer-level resolution: (<50 nm). Control step of 0.05 microns, hold force motor at 20,000 steps per mm.

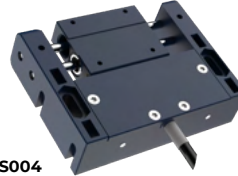
| | |
|----------------|-----------------|
| Force | >4 N |
| Velocity Range | 0 to 0.2 m/s |
| Min. Step | <0.05 μ m |
| Response | 20-30 μ sec |
| Travel Range | 10 mm |
| Temperature | -20° to +80°C |
| Driver Volts | 12 Vdc |
| Current | 350 mA |
| Weight | 22 g |
| Size | 40 x 31 x 11 mm |



LBS004-Encoder

| | |
|----------------|-------------------|
| Velocity Range | 0.014 to 140 mm/s |
| Min. Step | 2.6 μ m |
| Weight | 25 g |
| Size | 40 x 34 x 11 mm |

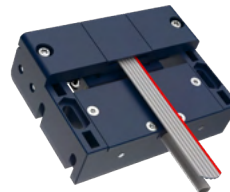
LCS Series



LCS004

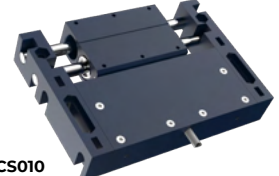
Very lightweight (1.5 oz). Compact precision linear piezoelectric actuator. Energy efficient. Low voltage: (12 Vdc), high force: {4 -10 N}, 15 mm stroke. Nanometer level resolution: (<50 nm). Rapid response time: 20 μ s to 30 μ s response compared to a typical stepper motor with 5ms to start motion. Open and closed loop configurations available.

| | |
|----------------|-----------------|
| Force | >4 N |
| Velocity Range | 0 to 0.2 m/s |
| Min. Step | <0.05 μ m |
| Response | 20-30 μ sec |
| Travel Range | 15 mm |
| Temperature | -20° to +80°C |
| Driver Volts | 12 Vdc |
| Current | 350 mA |
| Weight | 45 g |
| Size | 60 x 47 x 15 mm |



LCS004-Encoder

| | |
|----------------|-------------------|
| Velocity Range | 0.014 to 140 mm/s |
| Min. Step | 2.6 μ m |
| Weight | 50 g |
| Size | 60 x 47 x 20 mm |



LCS010

| | |
|----------------|------------------|
| Force | >10 N |
| Velocity Range | 0 to 0.2 m/s |
| Min. Step | <0.05 μ m |
| Response | 30-50 μ sec |
| Travel Range | 30 mm |
| Temperature | -20° to +80°C |
| Driver Volts | 12 Vdc |
| Current | 1600 mA |
| Weight | 190 g |
| Size | 106 x 77 x 18 mm |



LCS010-Encoder

| | |
|----------------|-------------------|
| Velocity Range | 0.014 to 140 mm/s |
| Min. Step | 2.6 μ m |
| Weight | 220 g |
| Size | 106 x 77 x 25 mm |

Rotary Motors

APPLICATIONS

The series of precision motors creates applications throughout diversified industries where motion control is required.

STEPS PER REVOLUTION

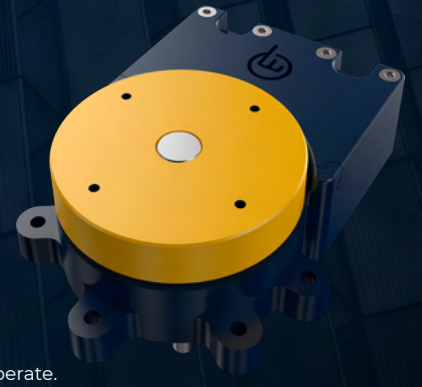
With a single step size of just 10 μ rad at full torque, these rotary motors are capable of 625,000 steps per single rotation.

NON-MAGNETIC

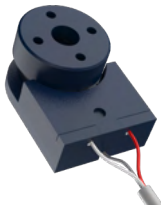
Piezo Motion's rotary motors provide the opportunity to operate in strong magnetic fields making them ideal applications for MRI.

RELIABLE

Rotary motors are available in a variety of custom designs and materials enabling applications in environments where traditional motors cannot operate.

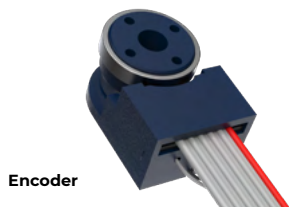


RAS Series



Ultra-lightweight (0.1 oz). Extremely energy efficient with zero energy consumption in hold position. 200,000 steps per rotation. Rapid response time: (10 to 30 μ s).

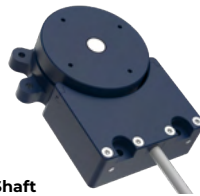
| | |
|--------------|--------------------|
| Max Torque | >2.5 mN.m |
| Max Speed | 600 rpm |
| Min. Step | <30 μ rad |
| Response | 10-30 μ sec |
| Temperature | -20° to +80°C |
| Driver Volts | 5 Vdc |
| Current | 50-300 mA |
| Weight | 4 g |
| Size | 13 x 18.7 x 8.2 mm |



Encoder

| | |
|-----------|-------------------|
| Min. Step | 6.1 mrad |
| Current | 50-350 mA |
| Weight | 6 g |
| Size | 13 x 18.7 x 15 mm |

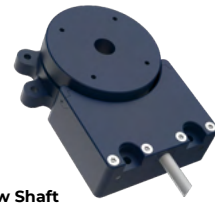
RBS Series



Solid Shaft

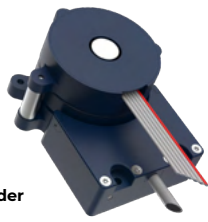
Lightweight (2.4 oz) compact precision rotary piezoelectric motor. Low voltage: [12 Vdc] and extremely energy efficient: zero energy consumption in hold position. 625,000 steps per rotation. Rapid response time: (<30 μ s). Hollow shaft and solid shaft options, direct drive with range of torques (>30 mN.m to >60 mN.m). Yields high resolution without sacrificing the torque output.

| | |
|--------------|-----------------|
| Max Torque | >30 mN.m |
| Max Speed | 100 rpm |
| Min. Step | <10 μ rad |
| Response | 30-50 μ sec |
| Temperature | -20° to 80°C |
| Driver Volts | 12 Vdc |
| Current | 350 mA |
| Weight | 85.5 g |
| Size | 66 x 52 x 20 mm |



Hollow Shaft

| | |
|--------------|-----------------|
| Max Torque | >30 mN.m |
| Max Speed | 100 rpm |
| Min. Step | <10 μ rad |
| Response | 30-50 μ sec |
| Temperature | -20° to 80°C |
| Driver Volts | 12 Vdc |
| Current | 350 mA |
| Weight | 69 g |
| Size | 66 x 52 x 20 mm |



Encoder

| | |
|-----------|-----------------|
| Min. Step | 196 μ rad |
| Current | 350 mA |
| Weight | 93.6 g |
| Size | 66 x 52 x 31 mm |



Encoder

| | |
|-----------|-----------------|
| Min. Step | 196 μ rad |
| Current | 350 mA |
| Weight | 85.5 g |
| Size | 66 x 52 x 31 mm |

Technology & Motion Control

At Piezo Motion, we are leading the way in Piezoelectric Motor Technology. Some of the key benefits of choosing Piezoelectric motors over traditional Electromagnetic motors (e.g. Stepper Motors) include:

HIGH PERFORMANCE



Technology that provides >1000 X's Better Resolution, >100 X's Faster Reaction Time and >10X's Greater Specific Power Stall Torque/Force compared to conventional DC motors.

NON-MAGNETIC



Piezo Motion's piezo motors are available in non-magnetic configurations making them ideal for specialized applications where traditional DC motors cannot be used.

ENERGY & COST SAVING



Piezo Motion's piezo motors operate at low voltage (5 Vdc or 12 Vdc drivers) require zero power hold position and can offer significant overall energy savings.

AFFORDABLE TECHNOLOGY



Patented innovative design with monolithic piezo ceramic resonator makes these high performing motors affordable to replace conventional DC electromagnetic motors.

UNIQUE PROPERTIES



Piezo Motion's piezo motors are scalable in design (rotary and linear), can be operated silently, and offer a compact low profile form factor.

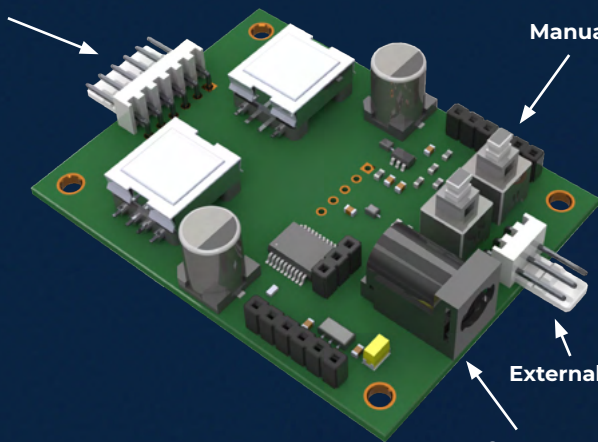
ENVIRONMENTAL



Piezo Motion's piezo motors do not emit any harmful electromagnetic interference and do not contain any rare earth elements.

OEM Driver Board

Output to Motor



Manual Control

External Control Input

DC Power Input

Motors can be controlled with the manual control buttons on the driver board. External control is achieved with a continuous or PWM signal applied to the external control inputs. For closed loop control, a Motion software package is available with a USB connection to the driver, or instructions can be sent with serial commands or using a Python API.



Piezo Motion is a leader in piezo motor technology with multi-million dollar investments in research and development of affordable piezoelectric motors to meet, and exceed, the needs of today's global markets. The company is committed to the development of innovative piezoelectric technology and motion products that enhance their functionality in a multitude of applications. We work with startups, OEMs, research institutions, and industrial companies worldwide, empowering the visionaries behind their products.



ELECTROMATE
Robotic and Mechatronic Solutions

Electromate's core purpose is to help manufacturers compete globally by building better machines using differentiated automation technology. They specialize in robotic and mechatronic solutions for the industrial automation marketplace. They support their customers with extensive product selection, just-in-time delivery, dedicated customer service, and technical engineering support.