PIEZOMOTION

ELECTROMATE

Robotic and Mechatronic Solutions

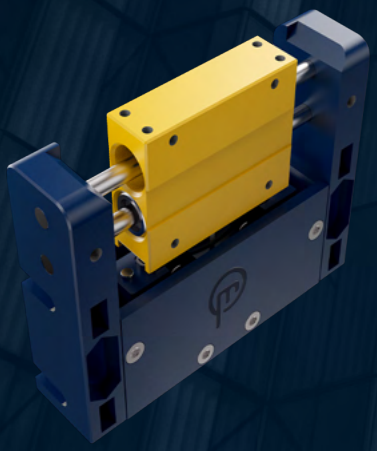
Motion Products

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.

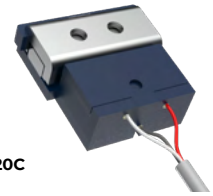
ENERGY EFFICIENT

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.

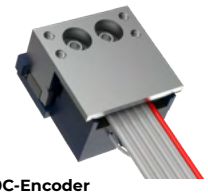
LAS Series



LAS20C

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

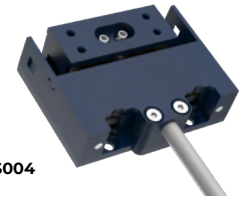
Force	>0.2 N
Velocity Range	0 to 0.2 m/s
Min. Step	<0.04 µm
Response	10-30 µsec
Travel Range	10 mm
Temperature	-20° to +80°C
Driver Volts	5 Vdc
Current	100 mA
Weight	4 g
Size	16.3 x 15 x 5.7 mm



LAS20C-Encoder

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

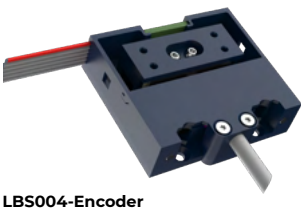
LBS Series



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.

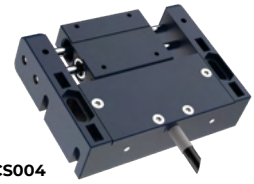
Force	>4 N
Velocity Range	0 to 0.2 m/s
Min. Step	<0.05 µm
Response	20-30 µsec
Travel Range	10 mm
Temperature	-20° to +80°C
Driver Volts	12 Vdc
Current	350 mA
Weight	22 g
Size	40 x 31 x 11 mm



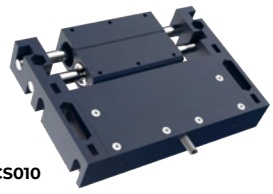
LBS004-Encoder

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

LCS Series



LCS004

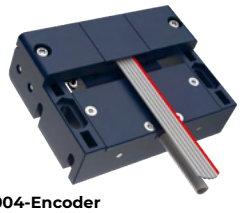


LCS010

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: 20µs to 30µs response compared to a typical stepper motor with 5ms to start motion. Open and closed loop configurations available.

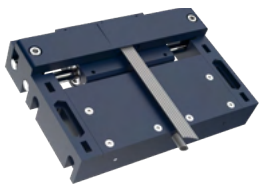
Force	>4 N
Velocity Range	0 to 0.2 m/s
Min. Step	<0.05 µm
Response	20-30 µsec
Travel Range	15 mm
Temperature	-20° to +80°C
Driver Volts	12 Vdc
Current	350 mA
Weight	45 g
Size	60 x 47 x 15 mm

Force	>10 N
Velocity Range	0 to 0.2 m/s
Min. Step	<0.05 µm
Response	30-50 µsec
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



LCS004-Encoder

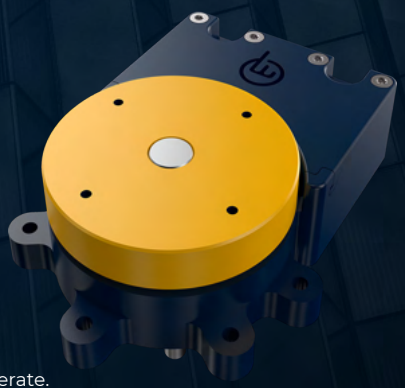
Velocity Range	0.014 to 140 mm/s
Min. Step	2.6 µm
Weight	50 g
Size	60 x 47 x 20 mm



LCS010-Encoder

Velocity Range	0.014 to 140 mm/s
Min. Step	2.6 µm
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 10µrad 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.

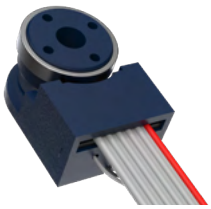
RELIABLE

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 µs).

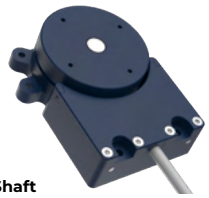
Max Torque	>2.5 mN.m
Max Speed	600 rpm
Min. Step	<30 µrad
Response	10-30 µsec
Temperature	-20° to +80°C
Driver Volts	5 Vdc
Current	50-300 mA
Weight	4 g
Size	13 x 18.7 x 8.2 mm



Encoder

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

RBS Series



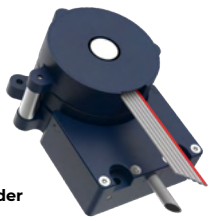
Solid Shaft

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 µs). 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 µrad
Response	30-50 µsec
Temperature	-20° to 80°C
Driver Volts	12 Vdc
Current	350 mA
Weight	85.5 g
Size	66 x 52 x 20 mm

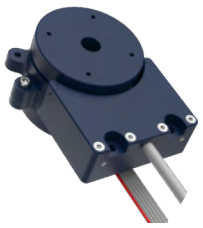
Hollow Shaft

Max Torque	>30 mN.m
Max Speed	100 rpm
Min. Step	<10 µrad
Response	30-50 µsec
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 µrad
Current	350 mA
Weight	93.6 g
Size	66 x 52 x 31 mm



Encoder

Min. Step	196 µrad
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.

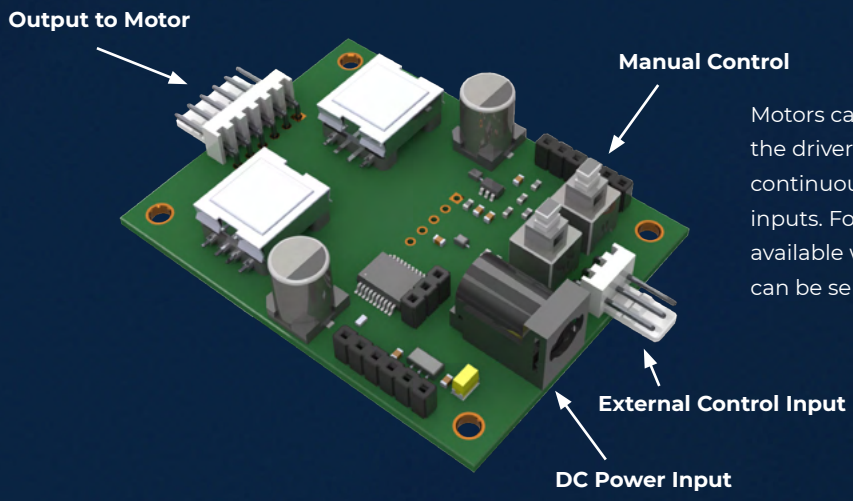
UNIQUE PROPERTIES

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**



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.

PIEZOMOTION

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.

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