

Silent Innovations

SPECIAL TOOTH GEOMETRY
REDUCES NOISE IN EXTERNAL
GEAR PUMPS

External gear pumps are rugged, economical, efficient and competitively priced. Additionally, they tend to create a great deal of noise while running. This noise has led to secondary measures for acoustic decoupling, insulation and encapsulation creating more work and costing more money for manufacturers. Bosch Rexroth has released a new generation of external gear pumps with a low-wear design that ensures efficiency and long service life called the Silence Plus.

The Silence Plus reduces the noise levels by an average of 15 decibels compared to conventional gear pumps. This constitutes a huge reduction in noise and pulsation which can lead to lower noise levels throughout the entire hydraulic system. The new pump is characterized by a subjectively much more pleasant, deeper sound.

“We’ve created a gear pump that doesn’t lose efficiency or sacrifice any speed or pressure,” says Bill Novak, product manager for Bosch Rexroth.



The Silence Plus from Bosch Rexroth reduces noise levels by an average of 15 decibels (courtesy of Bosch Rexroth).

“Rexroth has been developing quiet gear products since 1998 (silence pump, dual flank concept) and 2008 (Silence Plus pump, helical gear concept) and continues to be a market leader in low-noise gear technology. The noise levels are lower for the operators as well as anyone else in the vicinity, and the gear pumps adhere to the noise limitations set by the Occupational Safety and Health Administration (OSHA).”

The key to the Silence Plus design is the non-involute helical gearing, which uses its innovative tooth profile for continuous fluid delivery. This ensures virtually noiseless running of the pump while generating far fewer noise-exciting vibrations in the connected hydraulic system. The internal axial forces generated in the helical gearing are cancelled out in a wear-free manner using hydrostatic bearings. Use of the Silence Plus can, for example, reduce the total noise emission of a standard hydraulic power unit by 11 dB(A). The new pump combines increased comfort for the operator along with the expected high reliability of Rexroth external gear pumps.

“Rexroth went from a spur gear, zero backlash design to the helical gear concept which is very different and extremely effective in reducing the noise typically found in gear pumps,” Novak says.

The surfaces of the two gears are in contact not only at the flanks of the teeth but also at the top and bottom. There is no abrupt transfer of contact pressure from one flank to the next. Instead, there is a single contact line that moves continuously along a closed-loop



Christian Böhmecker and Lucas Wintjes, accept an innovation award for the Silence Plus at Hannover Messe 2011.

engagement pattern in the form of a figure eight. "The noise reduction results from the non-involute gear profile and continuous tooth contact that eliminates drive play in the gear set," Novak says.

The benefits of gear pump noise reduction can be found in industrial machine tools and mobile conveyor technology as well as mobile power packs, such as tail lifts on supply trucks. "The Silence Plus has been in series production since February 2011 and is being considered for European applications in material handling, paper cutting machines, electrical trucks, garbage trucks and trash compactors to name a few," Novak adds.

It is available successively in sizes from 12 to 28 cm³/rev. With dimensions identical to other series of Rexroth external gear pumps, the Silence Plus is

simple to integrate into existing systems.

In order to achieve high manufacturing standards, Rexroth requires that tolerances for all components are in the micrometer range. To develop external gear units, not only 3-D CAD and FEM strength analyses are used, but also modern optimization methods such as complex gearing calculations and vibration simulations. The latest measuring methodologies for high efficiency and low noise emission take place in a soundproof chamber per DIN and ISO standards.

At this year's Hannover Messe, the Silence Plus was declared the overall winner of the "Industriepreis 2011" industrial award. More than 500 product applications with innovative industrial solutions were received. The jury was made up of professors, scientists,

technical journalists, sector and industrial experts that acknowledged the significant engineering developments of the Silence Plus.

"Not everyone is going to jump onboard this concept at first, but we've tested the machine in real manufacturing settings and people are quite amazed how quiet the gear pump is during operation," Novak says. "We're now at a point where we'd like to examine different sizes and configurations and try to match the product to specific customers that have a need for low-noise applications."

For more information:

Bosch Rexroth Corporation
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Hoffman Estates, IL 60192
Phone: (847) 645-3600
www.boschrexroth.com/SILENCE-PLUS

Mico and Haldex

COLLABORATE ON ACCUMULATOR CHARGE VALVE WITH GEAR PUMP

Mico Inc. recently announced a collaboration with Haldex Hydraulics Corporation to offer an integrated accumulator charge valve and gear pump package. The integrated package reduces the amount of plumbing and mounting hardware needed, resulting in a less complex, more durable and efficient design. This product is designed for vehicles that use a full power hydraulic brake system and requires power-off braking by storing energy in accumulators.

Contributing to the package's long-lasting design is the Haldex gear pump that is known for its reliability

and durability. The gear pump's simple design also makes it a more cost-effective solution than alternative pump designs. The package greatly reduces the potential for leak paths by decreasing plumbing, which also makes the system easier and less time-intensive to incorporate into an overall design. Additional efficiency comes from the package's design feature that provides excess flow from the charge valve to operate steering, cooling or implement functions.

The integrated accumulator charge valve and gear pump package comes with the option of single or dual accumulator ports with four charging rate options

between 0.5 gallons per minute (gpm) and five gpm. The unit displaces up to 1.4 cubic inches with system pressures up to 3,000 psi maximum continuous.

For more information:

Haldex
10930 N. Pomona Avenue,
Kansas City, MO 64153
Phone: (800) 643-2374
www.haldex.com

Mico Incorporated
1911 Lee Boulevard
North Mankato, MN 56003
Phone: (507) 625-6426
www.mico.com

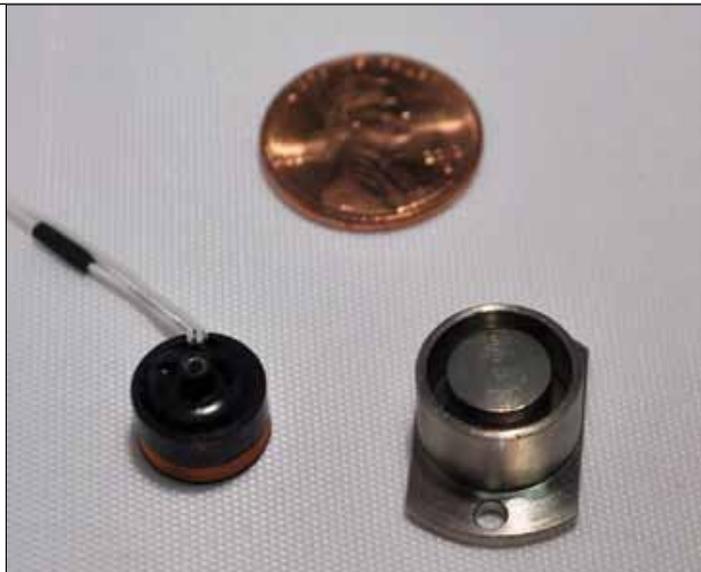


product news

BEI Kimco

OFFERS VOICE COIL ACTUATORS

BEI Kimco Magnetics, a company of Custom Sensors & Technologies (CST) Inc., has announced an exciting breakthrough in miniaturization for cylindrical shaped voice coil actuators (VCAs) with the introduction of the Model LA05-05-000A. The new actuator measures only 0.5" in diameter by 0.5" in length at mid-stroke, approximately 0.5" smaller than typical models on the market. This size reduction offers engineers a new solution in meeting tight packaging constraints for military, medical and industrial applications. "To our knowledge, the new actuator is unique—there is no other cylindrical VCA this small on the market," says Miguel Hermsillo, BEI Kimco's applications engineer for VCAs. "With its tiny size, customers can now use a VCA in spaces they previously



couldn't, opening a whole new realm of design options. Previously an application may have required a BLDC motor with other components to accomplish what the LA05-05-000A can now do with a single component."

The miniature actuator characteristics include a force of 2.5 ozf, a total stroke of 1.02 mm and an actuator constant of 1.04 N/sqrt (watt). The new actuator features direct drive, hysteresis-free and cog-free operation while delivering

high-acceleration and infinite position resolution, particularly important in mission-critical applications where precision is paramount.

For more information:

BEI Kimco Magnetics
1499 Poinsettia Ave. Ste 160
Vista, CA 92081
Phone: (760) 597-7042
www.beikimco.com

AutomationDirect

EXPANDS PROSENSE LINE

AutomationDirect has expanded the ProSense line of pressure sensors and temperature transmitters. IP68/IP69K-rated 5,000-psi pressure transmitters are available in zero to 10V and 4 to 20mA output models. Offering higher operating and burst pressures, the transmitters are suitable for use in applications such as hydraulic systems, paintball changing systems, biotechnology and more. ProSense PTD25 series pressure transmitter prices start at \$97. New TTD temperature transmitters, for use

with RTD probes, are available in three temperature ranges. Equipped with M12 quick-disconnects for fast wiring, the transmitters provide a high accuracy two-wire or three-wire 4–20mA signal output. The IP67 rated transmitters convert low-level RTD temperature probe output signals to high-level analog signals, making them more appropriate for long-distance transmission. Backed by a three-year warranty, ProSense temperature transmitter prices start at \$65.



For more information:

AutomationDirect
3505 Hutchison Road
Cumming, GA 30040
Phone: (770) 889-2858
www.automationdirect.com

Sevcon Motor Controllers

MEET HIGH PERFORMANCE DEMANDS



Sevcon has expanded its range of advanced technology Gen4 motor controllers for electric vehicles with the introduction of a new high power unit. The new Gen4 Size 8 AC motor controller is designed to meet the high performance and safety requirements of on-road and off-road electric vehicles and hybrid electric vehicles. The hardware platform of the new controller supports both AC induction and permanent magnet AC motor control technologies. The new controller has a continuous power output of up to 60 kW, with a peak output of up to 100 kW, and is capable of running from a peak DC supply voltage up to 400 V.

The size 8 model is the latest addition to the Sevcon Gen4 range that combines the latest in electronic motor control technology with a compact, rugged and IP66-rated design to meet the needs of electric vehicle (EV) OEMs, EV conversions and EV drivetrain system integrators. Advanced flux vector control improves traction control efficiency and motor responsiveness—channeling drive power and energy from the battery smoothly and efficiently. In addition, the controller is designed to support a wide range of vehicle functional safety requirements including ISO26262. Multiple motor sensor feedback options are provided through a range of hardware inputs and software control. Fully integrated sets of input and outputs are designed to handle a wide range of

vehicle functions, eliminating the need for additional external input/output modules or vehicle controllers and connectors.

Alternatively, for a lower level of vehicle integration, the controller can operate as a motor “slave,” directly receiving a required motor torque/speed command via CANbus. The CANopen

bus also allows the easy interconnection of multiple controllers and motors as well as devices such as displays and driver controls. Sevcon’s new Gen4 range of motor controllers forms part of a comprehensive range of AC and DC motor controllers, power converters and battery chargers for

continued



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www.sevcon.com

Tiny Rotary Position Sensor

FITS IN TIGHT SPACES



Piher International Corporation recently announced the availability of the non-contacting MTS 360 SMD Rotary Position Sensor. The MTS combines a through-shaft design with 360-degree absolute position feedback in an ultra miniature size with reliability up to 25 million cycles. With its size of only 6 mm x 17 mm x 18 mm, engineers can now integrate a fully featured rotary sensor directly on their PCB without the packaging issues that typically accompany encoders or other absolute position devices. The low profile fits easily in places that were previously too small for pre-packaged rotary sensors.

The MTS 360 relies on patented Hall effect technology to enable true non-contacting through-hole shaft sensing using standard SMD features. The offset

through-hole accommodates the vacuum pick-up tool, allowing use in automated SMD assembly systems. The standard model features a 4 mm double D-flat shaft and an 8-pad SMD footprint that is compatible in most reflow soldering systems.

The new device offers electrical angles up to 360 degrees with no dead band and linearity as low as ± 0.5 percent. Rated for use at -40 C to $+150$ C, the sensor can operate up to 300 RPM and can be programmed with full scale output with angles shorter than 360 degrees. Output is selectable between analog, PWM 12 bits or serial protocol (SPI) at 14 bits and includes a second output channel to provide a programmable switch signal. A redundant version with a dual core sensor in the same package is also available.

For more information:

Piher International Corporation
316 Washington Blvd. Ste A-103
Mundelein, IL 60060
Phone: (224) 475-0582
www.piher.net

Zero-Max Hubs

PROVIDE ACCURATE MECHANICAL ADJUSTMENTS

Zero-Max Phas-Lok adjusting hubs provide a fast and easy method for changing the phase relationship of components in a power transmission system. Phas-Lok compensates for required timing changes in a system. They provide an accurate, mechanical adjustment within a 24 degrees range (± 12 degrees). They eliminate the need to disconnect or remove drive components in order to reposition or re-synchronize drive components. Mounted in a system, Phas-Loks provide a reliable position control that does not loosen or slip during



equipment start up and shut down. Without any system disassembly, the phase adjustment can be made quickly on the machine with accuracy using ordinary hand tools.

"Phas-Loks are a time-proven device for fine tuning timing adjustment in a power transmission system," reports Robert Mainz, Zero-Max sales manager. Available in 3 sizes with bores ranging from 1/2 inch to 2-1/2 inches. Also available in metric bore sizes and with a variety of split taper bushings.

For more information:

Zero-Max, Inc.
13200 6th Avenue North
Plymouth, Minnesota 55441
Phone: (800) 533-1731
www.zero-max.com

Bison's ServoNOW

DESIGNED FOR SINGLE-AXIS APPLICATIONS

Bison's integrated brushless ServoNOW servo system for single-axis applications was designed to meet basic motion needs by limiting programmability and using simple positioning and speed

control applications. This state-of-the-art design reduces the amount of time and money spent on overall set-up and installation. All input and output functions of the ServoNOW are programmed into the set-up feature through a simplified indexing type command structure making it able to interface to nearly any logic input and output. Analog inputs can be selected and set up to control the position or velocity of the system. All set-up and installation can be accomplished with any standard PC with a built-in USB port. Free, downloadable host software called *QuickLaunch* is available with the package and loads on any Windows PC. The ServoNOW incorporates an inclusive closed-loop brushless servo motor with built-in driver, controller, magnetic encoder and 110/230VAC universal power supply all in one complete, compact package. Four programmable digital inputs and outputs, analog I/O (0 to 10 VDC or 4 to 20 MA, 12 bit) and position resolution of 4,096 counts per revolution are included.



For more information:

Bison Gear & Engineering Corporation
3850 Ohio Avenue
St. Charles, IL 60174
Phone: (800) 28-24766
www.bisongear.com

Technosoft

RELEASES SMALL
SERVO DRIVE SOLUTION

Technosoft recently announced a new family of intelligent servo drives known as

the iPOS Line based on a design concept offering higher power density on very compact boards. Modularly designed to cover both low- and high-volume applications, the first member of this family—iPOS3602 (36 V, 2 A, 75 W)—is a complete motion control and drive

solution packed on only 21 x 54 mm of PCB space. It integrates all the basic motor control functions, motion control and PLC features on a remarkably small-sized plug-in module.

Equipped with CAN/CANopen interfaces (optionally, additional

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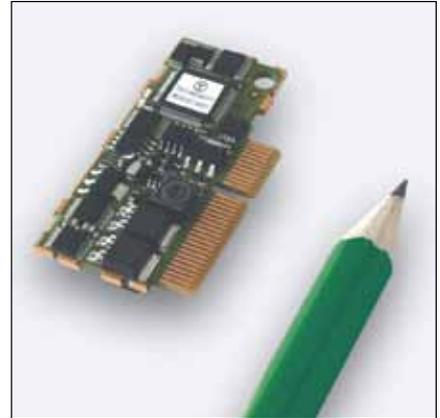
product news

EtherCAT interface also available), the iPOS drive controls any rotary or linear brushless, DC brush or step motor. The iPOS3602 is able to execute complex motion programs directly at drive level, using its built-in motion programmer and the high-level Technosoft Motion Language (TML), or it can operate as an intelligent EtherCAT and CANopen slave.

In simple applications iPOS3602 works as a single-axis motion controller and drive in stand-alone mode, autonomously running the program residing in its non-volatile memory. In systems that request a host, the iPOS drive operates as an intelligent slave executing motion sequences triggered by input lines, or commands received via RS-232 or CAN bus. The motion

capabilities of the iPOS card include position or speed profiles (trapezoidal, S-curve), 3rd order PVT and 1st order PT interpolation, electronic gearing and camming, analog or digital external reference, complemented with the cyclic synchronous position, speed and torque modes specific to EtherCAT. This enables you to reduce both the development time of complex applications, and the master's task, by calling complex motion functions, pre-stored in the drive memory, or by triggering their execution via I/O signals.

This drive can operate with a wide choice of feedback devices. Incremental and Sin/Cos encoders, digital or linear Halls are supported by default. SSI, BiSS, EnDAT absolute encoders and resolver interfaces are available through an additional extension.



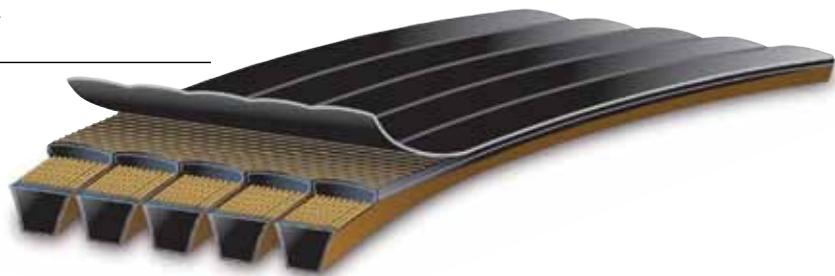
For more information:

Technosoft U.S. Inc.
48595 Wildrose Drive
Canton, MI 48187
Phone: (734) 667-5275
www.technosoftmotion.com

TB Wood's Belt Drives

PROVIDE HIGH-IMPACT STRENGTH

Premium belts from TB Wood's stretch less than standard cross sections, which makes them suitable for use on problem drives requiring high-impact strength and load-carrying power. Premium banded belts can replace several belts with the strength of a single belt. Banded belts feature a multiple-layer tie band that provides lateral rigidity to prevent belts from turning over or from coming off of the drive. Premium singles are available for applications when banded belts are not an option. Single belts can be used with deep groove sheaves and drives with limited room for "take up." They can also be an "A" section solution for multi-groove A/B sheaves. TB Wood's Premium V-belts can handle 1.4 to 2.2 times more horsepower than equivalent sized standard V-belts, so you can design a more compact drive that weighs less, puts less strain on costlier components, and



uses fewer belts.

A "clutching" non-rubber surfaced cover allows momentary slippage due to excessive overloads without burning belts up. Kevlar or Aramid tensile cords yield extraordinary strength, durability and virtually zero stretch. Chloroprene rubber compounds provide superb oil and heat resistance, and a treated-cover withstands slip and shear forces at peak loads without generating excessive heat and fends off penetration by foreign materials. Curve design compensates for effects such as sidewall bulge, which occur when belts bend around a sheave. A double fabric cover creates maximum abrasion resistance that protects against wear caused by fine airborne dust, which can cause rapid belt sidewall wear, resulting in early failures.

The strength of premium belts, combined with tough application environments, may require extra heavy-

duty TB Wood's sheaves that can meet the challenge. TB Wood's sheaves are carefully engineered to assure maximum performance over a long life span. They're constructed of fine-grain, high tensile cast iron. A full array of sheaves is available to meet specific application requirements with capacities up to 600 hp from stock and bore sizes from 1/2 to 8-1/2 inches. These belts are designed for use in a variety of industries including agriculture, pulp and paper, forestry, mining, construction, lumber, manufacturing and oilfields.

For more information:

TB Wood's Inc.
440 North Fifth Avenue
Chambersburg, PA 17201
Phone: (815) 847-7532
www.altramotion.com

Applimotion

OFFERS CUSTOM DIRECT-DRIVE MOTOR SYSTEM

Applimotion recently introduced a custom direct-drive motor system with precision encoders and bearings in unique packages. For years OEMs have routinely designed Applimotion ULT, UTH, UTS, and UTO frameless motor kits into direct-drive systems unique to an application. Applimotion is now offering custom design engineering to incorporate its widely popular frameless motor kits into application-specific direct-drive motors as a service to customers. Whether your requirements include special mechanical requirements, high accuracy for precision positioning or a harsh environment, Applimotion can create a solution. An Applimotion motor kit is selected based on performance needs. Then Applimotion engineers guide you through the selection of feedback and precision mechanical attributes. Finally, a complete custom direct-drive motor solution is fabricated and delivered, including unique testing if required.

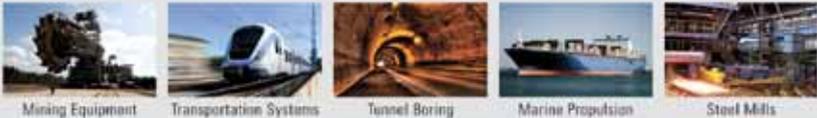
Direct-drive motors are finding their way into many new applications as the advantages in reliability, precision and performance are realized. Applimotion has supplied their motors to a wide range of industries including energy, medical, unmanned-vehicles, inspection, metrology and military/defense. Unfortunately, standard off-the-shelf solutions currently available often don't have the right features and can be too expensive.



Applimotion can create an affordable direct-drive solution that fits your application.

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Applimotion, Inc.
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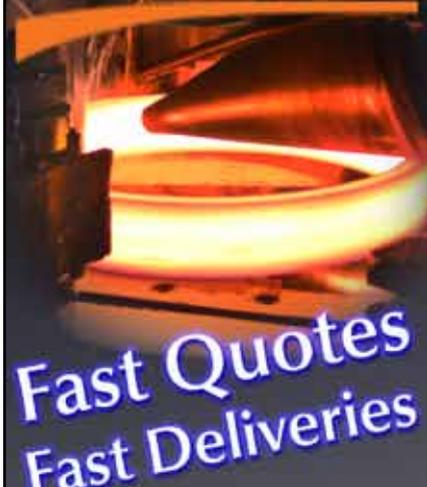
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product news

Ogura Brake

CONTROLS SHUTTER DOORS

Anyone who has ever lifted a manual rolling shutter door knows that sometimes doors in a free fall condition can have significant force behind them. Left unchecked, this force can cause either personnel injury or property damage. For this application, Ogura developed the new CFB Centrifugal Brake. In a normal speed condition, springs hold back the brake shoes the brake does not engage and the door can be raised or lowered normally. However, in an over-speed condition the brake shoes are applied by centrifugal force slowing the door down, the faster the speed, the higher the torque applied by the centrifugal brake. Since the brakes do not require any external controls and/or power sources they are very easy to set up and maintain. There are many other types of overhauling load applications that could also utilize this brake. Conveyor applications, hose reels, wire unwinding and over-speed protection



in windmills could all benefit from this type of brake. Ogura has been producing clutches and brakes since 1938. Over that time, the company has developed more than 5,000 different models of clutches and brakes. Although Ogura primarily produces electromagnetic clutches and brakes, it also produce magnet particle, mechanical, pneumatic, hydraulic and a variety of specialty products.

For more information:

Ogura Industrial Corp.
100 Randolph Road
Somerset, NJ 08873
Phone: (732) 271-7361
www.ogura-clutch.com



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Making use of the existing EKL line of compact elastomer couplings, the all new SLE safety coupling offers a compact, flexible and vibration damping option with integral torque overload release. Designed for aggressive servo driven applications, the SLE

is completely backlash free, relying on preloads and frictional connections, along with a precision molded, wear resistant, polyurethane insert to damp vibration and relieve bearing loads resulting from misalignment. In the event of a machine crash, power surge,

product news

or any other cause of unanticipated overload, the SLE will disengage the motor or gearbox shaft from the load in less than three milliseconds. Re-engagement takes place automatically with slow speed rotation of the shaft subsequent to the overload occurrence. Available in four sizes, the SLE handles a range of disengagement torque values from five to 700 Nm, and English or metric shaft diameters from 12 to 60

mm. Technical details can be viewed and downloaded at: http://www.rw-america.com/torque-limiters/torque-limiter-sle_t.php.

For more information:

R+W America L.P.
1120 Tower Lane
Bensenville, IL 60106
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www.rw-america.com



Physik

ADDS TWO MODELS TO MICROSCOPE STAGE SERIES

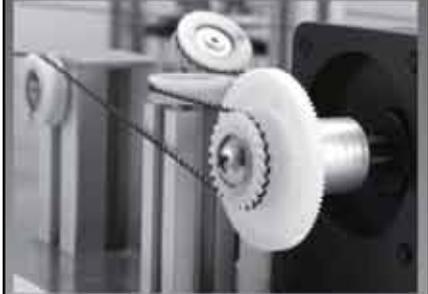
PI (Physik Instrumente) LP has added two higher-performance models to its successful PI nano superresolution (SR) microscope stage series. The new models are equipped with direct-measuring capacitive sensors. This type of sensor can provide higher linearity and long term stability than the lower cost piezoresistive sensor-equipped stages which are still available. Capacitive sensors are also less sensitive to noise due to a high-frequency measurement principle as opposed to the DC-based sensing technique used in piezoresistive sensors. The net effect is similar to the higher quality and lower noise on FM radio channels compared to AM radio. The large aperture accommodates microscopy accessories such as slide holders, Petri dish holders, etc. The recessed bottom slide mount allows full rotation of the turret without in and out Z-motion, protecting valuable

objectives from crashing into the stage on turret rotation. Both XY and XYZ stages are available. The low profile design of 20 mm (0.8") facilitates the integration into inverted microscopes from the four major manufacturers Leica, Nikon, Olympus and Zeiss. An optional 25 x 25 mm positioning stage with self-clamping ultrasonic ceramic motors serves as a stable basis for the piezo scanning stage and allows imaging of large samples. The microscope stages are compatible with all major image acquisition software packages such as Micromanager, Metamorph, etc.

For more information:

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