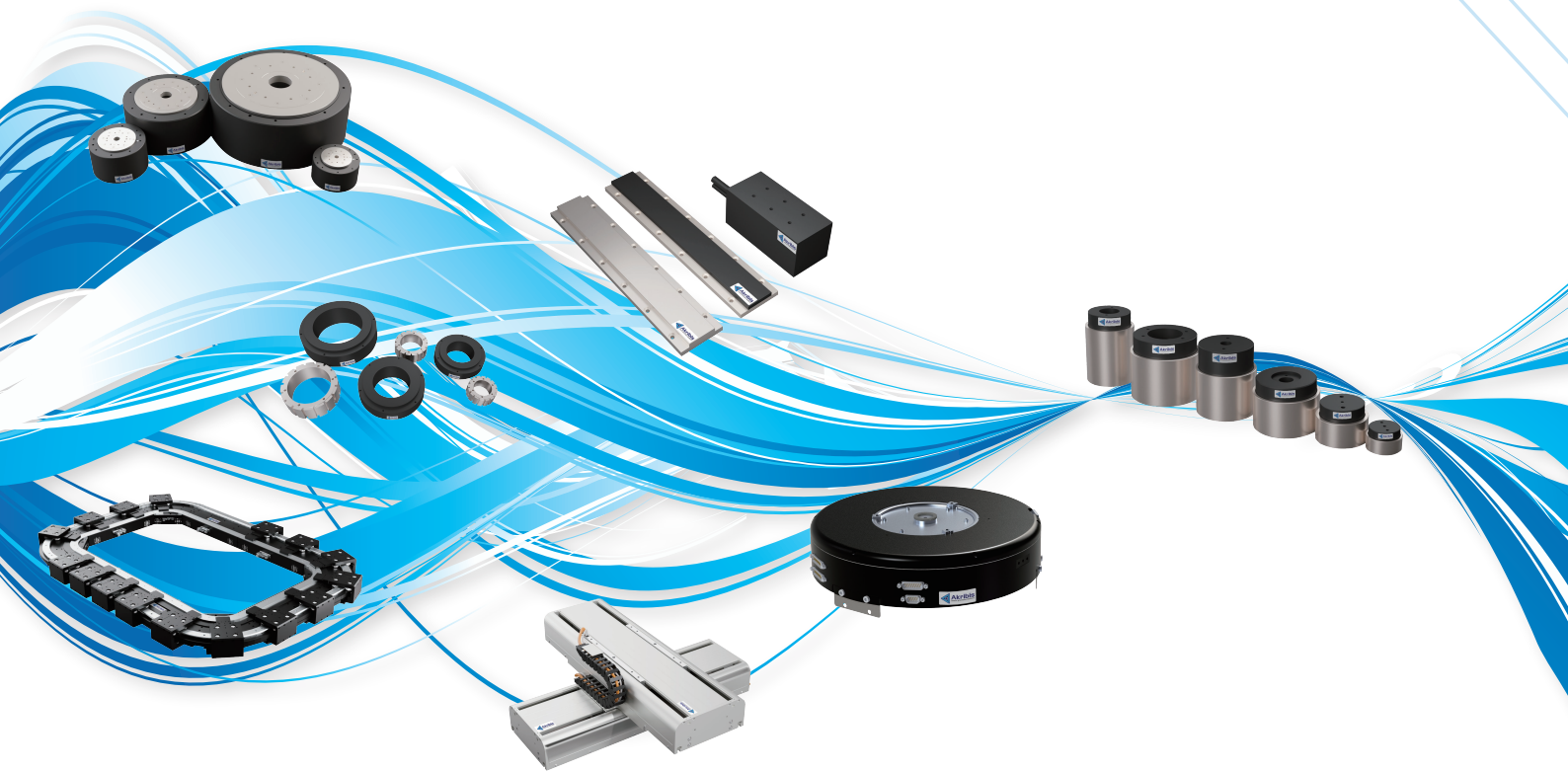


# Akribis

## Focus on R&D

- ♦ Linear Motors
- ♦ Direct Drive Rotary Motors
- ♦ Voice Coil Motors
- ♦ High Precision Stages and Systems





Akribis is a Latinized Greek word that means “Precision”. On the Akribis logo, the letter “a” is formed by a line and a circle, representing linear and rotary motions. These are supported by a tetrahedron structure, the same structure as the diamond crystal which has many exceptional physical properties.

The logo signifies that Akribis Systems’ sound engineering expertise is the basis of the company’s foundation, and this enables us to provide customers with precise, direct drive motion control solutions.

Akribis Systems Pte Ltd was founded in 2004. We design and manufacture direct drive motors, stages and precision systems that are used in equipment for manufacturing, inspection and testing. Akribis Systems supports a wide range of industries including semiconductor, solar, flat panel, hard disk, LED, printed circuit board, printing, photonics and biomedical manufacturing.

From the beginning, the company has been focusing on innovation and development of new technologies and solutions in motion control, with more than 139 patents applied. Backed by a very strong and committed engineering team, the company continues to develop custom motors and systems for demanding applications.

We have manufacturing facilities in Singapore and in Shanghai, Nantong and Dongguan, China and in Selangor, Malaysia and in Siheung, Korea. Our sales network includes our sales offices in USA, Germany, South Korea, Japan, Thailand, Israel and Malaysia, and is reinforced by our comprehensive distribution channels in Asia, Europe and North America.





## Services We Offer:

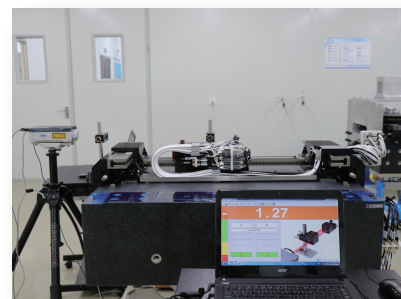
- ▶ Motor design
- ▶ Manufacturing standard positioning stages
- ▶ Magnetic and mechanics finite element analysis
- ▶ High precision stages
- ▶ Air-bearing stage design and air-bearing design
- ▶ Motion control platform design and software development
- ▶ Machine vision aided motion control solution
- ▶ Laser interferometry characterisation of stages
- ▶ Vibration analysis, measurement and management

## Application Areas:

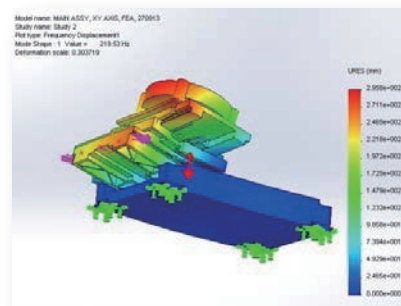
- ▶ Semiconductor manufacturing (wafer inspection, BGA and IC inspection, wire bonding, die bonding and sorting, laser marking, dicing, flip chip etc.)
- ▶ Hard disk (HGA, slider manufacturing, inspection, texturing of disk media etc.)
- ▶ Biomedical (DNA/Gene extraction, micro array, pharmaceutical manufacturing etc.)
- ▶ Machine tools (CNC milling, EDM wire cut etc.)
- ▶ Inspection systems (photon emission microscopes, vision systems etc.)
- ▶ LCD/TFT (inspection systems, laser marking, cutting etc.)
- ▶ Others (printing, automation parts manufacturing, connectors manufacturing, dispensing systems, PCB manufacturing etc.)



Design and Analysis



Laser Calibration



Finite Element Analysis

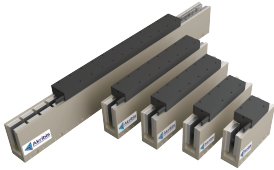


Training Seminar

## LINEAR MOTORS

### Ironless Motors

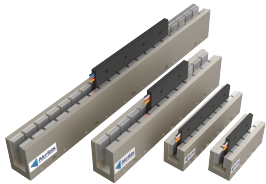
#### AUM Series



- ▶ Ironless, direct drive brushless linear motors
- ▶ Zero cogging design
- ▶ Low moving mass with high force density
- ▶ 6 models (AUM 1, 2, 3, 4, 5, 6)

Applicable to: High accelerations (10G or more) and high speed equipped with air bearings can be used in nanoscale positioning

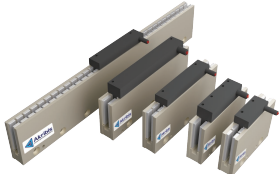
#### AWM Series



- ▶ Ironless technology
- ▶ Vacuum compatible (RGA tested)
- ▶ Zero cogging force, high force density
- ▶ High peak force and big continuous force

Applicable to: Vacuum environment

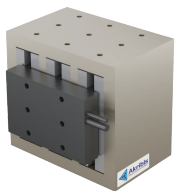
#### ALM-T Series



- ▶ Small thickness, light weight and high force density
- ▶ Zero cogging force and smooth operation
- ▶ High dynamic response
- ▶ Optional digital hall modules

Applicable to: Thin modules and light-load high-speed reciprocating applications in semiconductors, flat panel displays, ultra-precision stages, biomedical/lab automation, optics

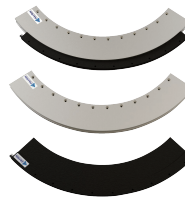
#### AHM Series



- ▶ Ironless, direct drive brushless linear motors
- ▶ Zero cogging
- ▶ Compact size with high force to mass ratio

Applicable to: Short stroke and high acceleration applications

#### ACR Series



- ▶ Ironless technology
- ▶ Narrow width, light weight, zero cogging force
- ▶ Large turning radius Integrated with hall sensor module and temperature sensors
- ▶ Limited angle or 360° rotation, multi-coil and multi-track configuration

Applicable to: Correction axis of generation 2.5~10.5 LCD panel

#### RDM-A Series

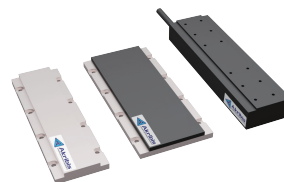


- ▶ Compact size, similar to ball screw shape, convenient to replace traditional transmission method
- ▶ Full utilization of flux lines
- ▶ Ironless, no attraction force between mover and stator, easy for assembly
- ▶ No cogging force, smooth operation
- ▶ Multi-mover on one track available, flexible configuration

Applicable to: Suitable to high-speed printer, biomedical equipment, semiconductor equipment, CNC (wire cut EDM machine, etc.), single/multi-axis module platform, counterpoint platform, Z-axis pick-and-place module

### Iron Core Motors

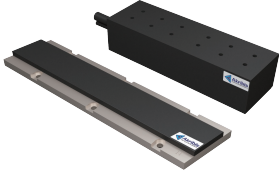
#### AJM Series



- ▶ Ironcore technology, low cogging
- ▶ Integrated with Hall sensor module
- ▶ High force density
- ▶ Maximum continuous force of 440N maximum peak force of 1400N

Applicable to: Micron positioning of point-to-point motion

## AQM Series



- ▶ Ironcore technology, low cogging
- ▶ Integrated with hall sensor module
- ▶ Cost-effective, narrower width
- ▶ Maximum continuous force of 400N, maximum peak force of 1000N

Applicable to: Micron positioning of point-to-point motion

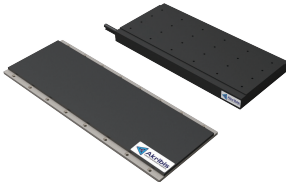
## AKM Series



- ▶ Ironcore technology, low cogging
- ▶ Integrated with hall sensor module, cost-effective
- ▶ Maximum continuous force of 9200N, maximum peak force of 12800N
- ▶ Improved water cooling design

Applicable to: Micron positioning of point-to-point motion, CNC lathe, CNC grinding machines

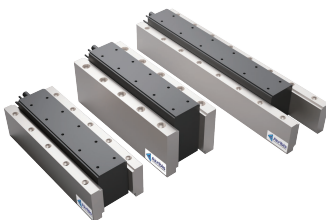
## AKH Series



- ▶ Ironcore technology, low cogging
- ▶ High response and bandwidth
- ▶ Patented water-cooling design
- ▶ Self-cooling, water-cooling optional

Applicable to: Laser processing machine, high-speed grinding machine, grinding machine and lithium/liquid crystal and other handling

## AKD-A Series



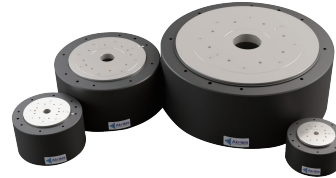
- ▶ Iron core technology and low cogging force
- ▶ High continuous and peak force
- ▶ Dual magnet tracks
- ▶ Balanced attraction force
- ▶ High motor constant
- ▶ Fast dynamic response

Applicable to: Point-to-point micron meter level positioning; unlimited travel stroke with top speed of 5m/s or faster (stroke of 100m or longer).

## DIRECT DRIVE ROTARY MOTORS

### Frame Torque Motor

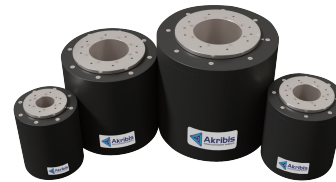
#### ADR-A Series



- ▶ Direct drive, brushless motor using ironcore technology
- ▶ Diameter of 110mm, 135mm, 175mm, 220mm and 360mm
- ▶ Integrated with high resolution encoder, repeatability reaches  $\pm 2$ arc sec
- ▶ High torque with low inertia, low cogging torque

Applicable to: High speed rotary positioning

#### ADR-B Series



- ▶ Direct drive, brushless motor using ironcore technology
- ▶ Diameter of 110mm, 135mm, 175mm and 220mm
- ▶ High torque with low inertia
- ▶ Integrated with high resolution encoder, repeatability up to  $\pm 2$ arc sec
- ▶ Low cogging torque, large center hole

Applicable to: High speed rotary positioning

#### ACD Series (Ironless)



- ▶ Direct drive, brushless motor using coreless technology
- ▶ Zero cogging torque, diameter of 62mm, 120mm and 200mm
- ▶ Integrated with high resolution encoder, repeatability up to  $\pm 3$ arc sec
- ▶ Fast response and short settling time
- ▶ Precision zero return through home signal

Applicable to: Low-speed smooth motion and optical detection

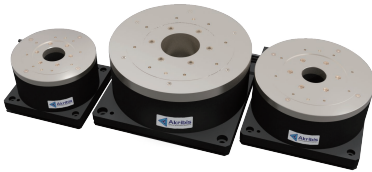
## ACW Series (Ironless)



- ▶ Super flat design direct drive brushless motor
- ▶ Zero cogging torque, fast response and short settling time
- ▶ Integrated with high resolution encoder, repeatability up to  $\pm 3\text{arc sec}$
- ▶ Diameter of 120mm, 170mm and 220mm

Applicable to: Laser cutting and rotation correction

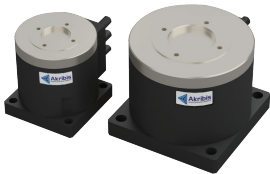
## AXD Series



- ▶ Direct drive brushless motors
- ▶ Low cogging torque, suitable for both high and low speed situation
- ▶ Large center hole, flat design
- ▶ Integrated with high resolution encoder, repeatability reaches  $\pm 2\text{arc sec}$
- ▶ Cost-effective
- ▶ Diameter of 80mm, 120mm, 160mm, 200mm, 280mm and 400mm

Applicable to: High precision rotary positioning

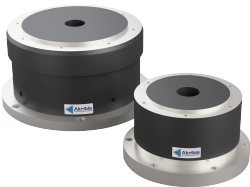
## AXM Series



- ▶ Direct drive brushless motors
- ▶ Integrated with encoder and bearing
- ▶ High torque compact design, low cogging torque
- ▶ Integrated with high resolution encoder, repeatability reaches  $\pm 10\text{arc sec}$
- ▶ Diameter of 40mm and 60mm

Applicable to: Dimension constraints, high speed and high precision rotary positioning

## AER-C Series (Outer Rotor)



- ▶ Outer rotor
- ▶ Low runout
- ▶ Strong resistance to contamination
- ▶ Direct drive brushless motor
- ▶ Low cogging torque
- ▶ High torque density

Applicable to: It is suitable for all kinds of industrial applications such as semiconductor manufacturing, battery manufacturing, and circuit board printing. It is particularly suitable for some low run-out and high-precision applications, such as wafer dicing

## Frameless Torque Motor

### ADR-P Series



- ▶ Frameless direct drive, brushless motor using ironcore technology
- ▶ Diameter of 110mm, 135mm, 175mm, 220mm and 360mm
- ▶ High torque with low inertia, low cogging torque

Applicable to: Fields of low speed fluctuations, gear measurement, grinding machine and robot's joints

### ADR-F Series



- ▶ Direct drive brushless motors
- ▶ Low cogging torque, small size, compact design
- ▶ High torque density, rated speed of 3500rpm@48Vdc
- ▶ Diameter of 45mm, 60mm, 75mm and 90mm

Applicable to: Robot's joints

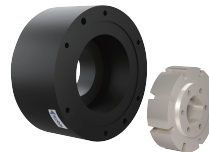
### ADR-T Series



- ▶ Direct drive brushless motors
- ▶ Low cogging torque, small size, compact design
- ▶ Higher cost performance
- ▶ High torque density
- ▶ Diameter of 50mm and 80mm

Applicable to: Robot's joints

### ACD-P Series (Ironless)



- ▶ Direct drive coreless motor
- ▶ No cogging torque
- ▶ Low velocity ripple

Applicable to: Inspection applications



## ADR-C Series



- ▶ Large center bore
- ▶ Water cooling design
- ▶ High torque density
- ▶ Low cogging torque

Applicable to: Applications requiring substantial torque density, such as photovoltaic industry and semiconductor fabrication, particularly well-suited for CNC turntables

## AER-F Series (Outer Rotor)

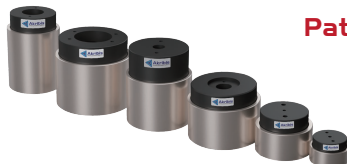


- ▶ Frameless, water-cooled external rotating substructure design
- ▶ Outer rotor PMSM
- ▶ Diameter 225mm, 285mm, 335mm optional
- ▶ Low speed, high torque, low cogging torque

Applicable to: CNC rotary table

## VOICE COIL MOTORS

### AVM&AVM-HF Series (Circular Voice Coil Actuators)



**Patented Design**

- ▶ Direct drive for point-to-point motion
- ▶ Stroke range from 5mm to 30mm
- ▶ Zero cogging force
- ▶ Low coil mass with fast response and high bandwidth
- ▶ Ultra high resolution motion (depends on the feedback device)

Applicable to: Optical focusing, high speed picking and placing, power controlling and high-frequency applications

### AVA Series (Flat Voice Coil Actuators)



- ▶ Direct drive for point-to-point motion
- ▶ Low profile, suitable for linear stages, zero cogging force
- ▶ Low coil mass with fast response and high bandwidth
- ▶ Ultra high resolution motion (depends on the feedback device)

Applicable to: Optical focusing, high speed picking and placing, and force control

## OTHER PRODUCTS

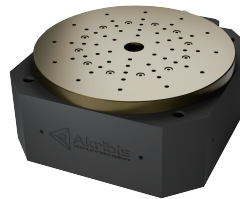
### MSP-A Series Magnetic Spring



- ▶ Simple structure
- ▶ Constant force, instant response
- ▶ Free of power supply, free of linearguide
- ▶ Simple maintenance

Applicable to: Can be used in many application scenarios, including but not limited to gravity compensation, ensuring Z-axis module self-locking when power off, and supplying constant force within specific travel range

### AAR-A Series Air-bearing Rotary Stage

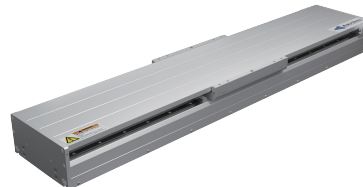


- ▶ Compact structure, high rigidity
- ▶ Built-in ironless brushless direct drive motor
- ▶ Ultra-low velocity fluctuation
- ▶ Excellent axial/radial runout < 100nm
- ▶ Accurate positioning, repeatability up to  $\pm 0.5$ arcsec

Applicable to: Wafer inspection, biodetection, X-ray diffraction system, optical inspection, nanotechnology equipment manufacturing, optical manufacturing, etc.

## STAGES AND SYSTEMS

### DGL 150/180/200/260-S Stage Series



- ▶ Dual guide linear motor stage
- ▶ Stroke from 0.1m to 60m
- ▶ Direct drive, zero backlash
- ▶ Linear encoder resolution of 0.1 $\mu$ m and 0.05 $\mu$ m minimum of 2.4nm
- ▶ Velocity up to 5m/s, acceleration up to 10G

Applicable to: High-speed, high-precision positioning

## DGL 180/200/260-BC Series



- ▶ Dual guide linear motor stage with bellow covers
- ▶ Direct drive, zero backlash
- ▶ Linear encoder resolution of 1μm, 0.5μm and 0.1μm

Applicable to: High-speed, high-precision positioning in harsh environment

## DGH 200 SS Series



- ▶ Dual guide linear motor stage for clean room applications
- ▶ Clean room sealing strip design
- ▶ Linear encoder resolution of 0.1μm and 0.05μm minimum resolution of 2.4nm

Applicable to: High-speed, high-precision positioning in clean room environment

## DGC Series



- ▶ Dual guide linear motor stage
- ▶ Stroke from 0.1m~6m
- ▶ Direct drive, zero backlash
- ▶ Linear encoder resolution of 1μm, 0.5μm and 0.1μm
- ▶ Velocity up to 5m/s, acceleration up to 10G

Applicable to: Low precision handling applications

## XRL 95/130/250 Stage Series



- ▶ Cross roller linear motor stage
- ▶ Excellent straightness and flatness with high load capacity
- ▶ High repeatable positioning accuracy
- ▶ Direct drive, zero backlash and zero cogging force
- ▶ Linear encoder resolution of 0.1μm, 20nm and 5nm

Applicable to: Optical detection

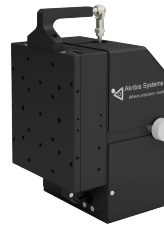
## XMZ 130 Series



- ▶ Stable gravity compensation in stroke
- ▶ No additional electricity or compressed air is required
- ▶ Compact size, fast response

Applicable to: Z-axis direct drive modules requiring gravity compensation

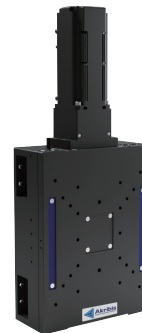
## XAZB 95/130 Series



- ▶ Gas balance module
- ▶ Low friction cylinder for high accuracy
- ▶ Compact size

Applicable to: Z-axis direct drive modules that require gravity compensation

## XRB 120/190 Series



- ▶ Dual feedback system
- ▶ Brake system
- ▶ Suitable for Z-axis applications (wall-mounted)

Applicable to: Optical focusing, high-precision positioning of detection axes for electronics, semiconductors, photovoltaic sheets, lithium batteries and other equipment

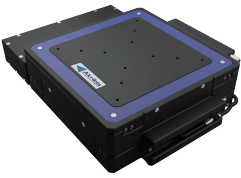
## XRZ 120/170/190 Series



- ▶ Voice coil module
- ▶ Cylinder Counterbalance Horizontal Z-axis
- ▶ Stroke: 15/25/30mm

Applicable to: Optical inspection and precision manufacturing

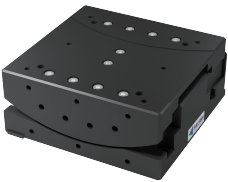
## XRS Series



- ▶ Integrated, small combined height XY direct drive platform
- ▶ Anti-creep crossed-roller bearings
- ▶ Multi stroke options

Applicable to: High-precision industrial and scientific research projects such as precision laser processing, laser cutting, LED wafer scribing, flying scanning inspection, surface roughness inspection, etc.

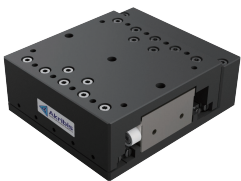
## XRG 70/110 Series



- ▶ Compact design, direct-drive goniometer positioning stage
- ▶ 12.0 degree stroke
- ▶ Can be stacked into a pitch-roll positioning stage with intercepting axis of rotation

Applicable to: Optical inspection and precision manufacturing

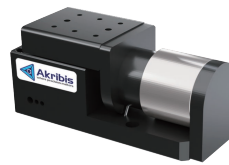
## XRV 76/97/115 Stage Series



- ▶ Crossed roller square voice coil motor platform
- ▶ Stroke up to 20mm
- ▶ Direct drive, zero backlash and zero cogging force
- ▶ Optical encoder resolution of 0.2μm, 0.05μm or analog optional

Applicable to: Optical focusing, high speed picking and placing, and force control

## XMGV 38/41/52/84 Stage Series



- ▶ Crossed roller circular voice coil motor platform
- ▶ Stroke from 15mm to 30mm
- ▶ Zero backlash and zero cogging force
- ▶ Linear encoder resolution of 0.2μm, 0.05μm or analog optional
- ▶ Fast response and high bandwidth

Applicable to: Optical focusing, high speed picking and placing, and force control

## TGV Stage Series



- ▶ Voice coil motor stage with large centre through hole
- ▶ Direct drive, zero backlash and zero cogging force
- ▶ Low friction bearings
- ▶ Linear encoder resolution of 0.2μm, 0.05μm or analog optional
- ▶ Ideal for lens focusing applications

Applicable to: Optical focusing, force control and high-frequency applications

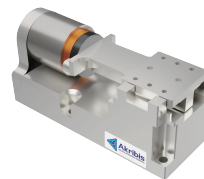
## MBV Series



- ▶ Voice motor, fast response speed
- ▶ Governor spring, automatically up when power off
- ▶ Integrated with grating encoder, resolution of 0.5μm
- ▶ Effective stroke of ±3mm, ±4mm
- ▶ Suitable for Z axis, compact design

Applicable to: High speed picking and placing

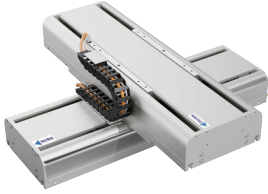
## XCV Series



- ▶ Voice coil motor positioning system
- ▶ Stroke 4mm
- ▶ Repeatability 0.5μm
- ▶ No cogging, high dynamics and control bandwidth
- ▶ Optical encoder with user selectable resolution 50nm, 0.2μm, 0.5μm

Applicable to: Sub-micron positioning, pick and place, force control

## XY-DGL Stacked Stage Series



- ▶ XY stacked linear motor stage
- ▶ Integrated with optical encoder
- ▶ Dual guide design

Applicable to: Laser cutting and micron measurement of XY axis

## XY-DGL Series



- ▶ XY integrated linear motor stage
- ▶ Build-in integrated with optical encoder
- ▶ Dual guide, cantilever structure design

Applicable to: Micron measurement of XY axis and high-speed, high-precision positioning

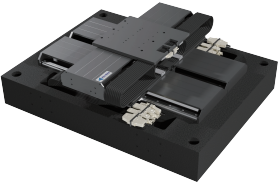
## XY-DGL Stacked Stage Series



- ▶ XY stacked linear motor stage with bellow covers
- ▶ Build-in integrated with optical encoder
- ▶ Dual guide design

Applicable to: Laser cutting and micron measurement of XY axis

## TGS-XY Series



- ▶ High precision XY wafer inspection stage
- ▶ Good for Class 1000 clean room
- ▶ Effective stroke 500×500mm
- ▶ Max speed up to 800mm/s with repeatability  $\pm 1\mu\text{m}$

Applicable to: Wafer inspection, biomedical, etc.

## VRG-I/VRG-II/VRG-III Series



- ▶ Versatile gantry stage with T drive or H drive configuration
- ▶ Options of various ironcore motors (AJM/AKM series) or ironless motors (AUM series)
- ▶ T drive gantry using single linear encoder of resolution  $0.5\mu\text{m}$ ,  $1\mu\text{m}$  or analog encoder
- ▶ H drive gantry using dual linear encoders on the bottom axis for better positional accuracy and repeatability
- ▶ High motor constant provides high peak force and continuous force
- ▶ Stable and consistent motion performance with short settling time, high throughput

Applicable to: Dispensing, micro assembly and precision detection

## APK Series



- ▶ Single axis (Z) actuator, dual axis (Z and Theta) actuator and three axis (XZT) actuator, force control accuracy up to  $10\text{g} \pm 2\text{g}$
- ▶ Z-axis stroke options of 25mm, 50mm, 100mm
- ▶ Fast response and short settling time
- ▶ Rotary axis comes with hollow shaft for vacuum feed through

Applicable to: The hollow shaft design supports vacuum adsorption pick and place

## APC Series



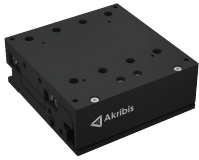
- ▶ Z-axis 2G acceleration
- ▶ 30mm stroke and 2-axis option
- ▶ Compact 2-axis design at only 16mm thickness
- ▶ Vacuum tip
- ▶ High force to weight ratio

Applicable to: Pick and place by vacuum suction



## AM Series Miniature Stages

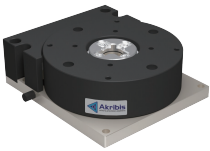
### AML Series



- ▶ Compact linear motor positioning stage
- ▶ Stroke from 10~20mm available
- ▶ Integrated with high precision optical encoder, resolution from 50nm~0.5μm, SINCOS optional
- ▶ Repeatability up to ±0.3μm
- ▶ Freely combination with AML, AMZ, AMR

Applicable to: Sub-micron optical positioning stage

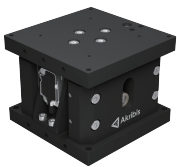
### AMR Series



- ▶ Miniature rotary positioning system
- ▶ Product dimensions: 76×65×25mm(L×W×H)
- ▶ Rotation up to 50°
- ▶ Build-in optical encoder, repeatability ±0.5arcsec
- ▶ Modular assembly, can be stacked with AMS to XT or XYT stage

Applicable to: Rotary correction, optical alignment stage, etc.

### AMZ Series



- ▶ Compact linear motor vertical Z positioning stage
- ▶ Effective stroke 8mm
- ▶ Integrated with high precision optical encoder, resolution from 50nm~0.5μm, SINCOS optional
- ▶ Repeatability up to ±0.2μm
- ▶ Freely combination with AML, AMZ, AMR

Applicable to: Sub-micron optical positioning stage

### AMS Series



- ▶ Super flat miniature linear positioning stage
- ▶ Stroke 15mm, other customized stroke upon request
- ▶ Repeatability ±0.3μm
- ▶ Optical encoder with user selectable resolution 0.5μm~50nm or SINCOS
- ▶ Modular assembly, can be stacked to XY or together with AMR to XT or XYT stage

Applicable to: For sub-micron positioning, optical alignment, etc.

### AM Series Stacked XYT

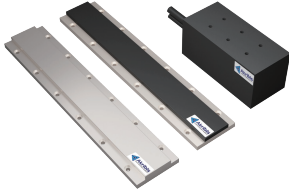


- ▶ Compact linear motor XYT positioning stage
- ▶ Stroke from 10~20mm optional
- ▶ Integrated with high precision optical encoder
- ▶ Repeatability up to ±0.5μm

Applicable to: Sub-micron optical positioning stage

## APPLICABLE TO CNC INDUSTRY

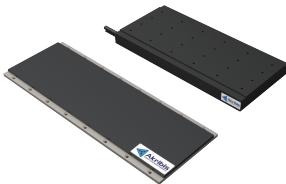
### AKM Series (Water-cooled Linear Motor)



- ▶ Continuous force: 580N~6190N
- ▶ Peak force: 805N~12884N

Recommended Applications: CNC lathe, CNC grinding machine

### AKH Series (Water-cooled Linear Motor)



- ▶ Continuous force: 1097N~6320N
- ▶ Peak force: 2750N~16500N

Recommended Applications: Five-axis machining center and other high-grade CNC machine tools

### ADR-C Series (Water-cooled Direct Drive Rotary Motor)



- ▶ Continuous torque: 44.6Nm~1009.8Nm
- ▶ Peak torque: 127Nm~2000Nm

Applicable to: Applications requiring substantial torque density, such as photovoltaic industry and semiconductor fabrication, particularly well-suited for CNC turntables

### AER-F Series (Water-cooled Direct Drive Outer Rotor Rotary Motor)

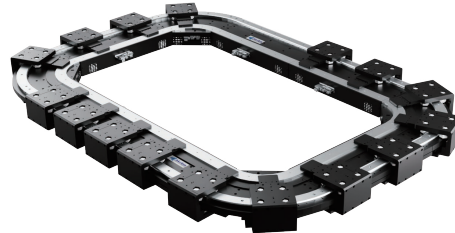


- ▶ Continuous torque: 149.5Nm~613.8Nm
- ▶ Peak torque: 299Nm~1227.6Nm

Applicable to: CNC rotary table

## INTELLIGENT FLEXIBLE CONVEYOR SYSTEM

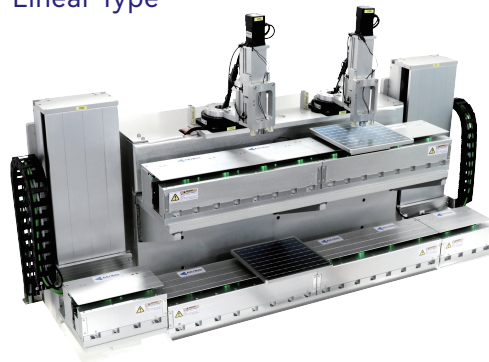
### Loop Type



- ▶ Full direct drive module
- ▶ Multi-movers substructure design
- ▶ Max. speed up to 4m/s
- ▶ Repeatability up to  $\pm 30\mu\text{m}$

Applicable to: High precision cyclic conveyor in various integrated devices

### Linear Type

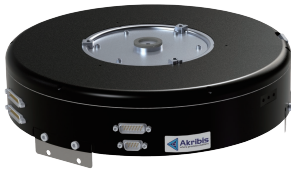


- ▶ Full direct drive technology
- ▶ Multi-configuration possible, vertical and horizontal
- ▶ Flexible configuration of conveyor length and multi-movers possible
- ▶ Independent and real time position control of every single mover
- ▶ Repeatability up to  $\pm 5\mu\text{m}$  and Max. speed up to 3m/s

Applicable to: Lithium battery, car assembly, semiconductors, biomedical, modern packing and 3C industries

## WAFER STAGES

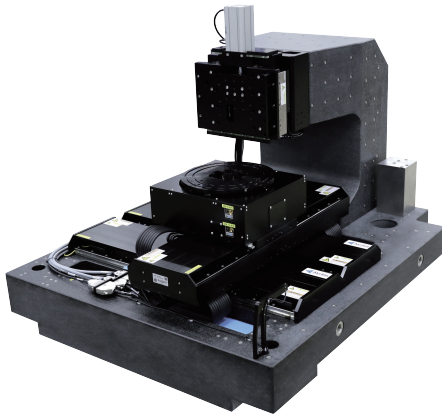
### PGS-ZTPR Series



- ▶ Frictionless guidance with wear-free flexure bearings
- ▶ Tight integration provides 4 degrees of freedom (Z, Rx, Ry, Rz) motion in a compact and lightweight package
- ▶ Optimized dynamics for rapid move and settle and nanometric position stability
- ▶ Vacuum feedthrough channel to chuck available

Applicable to: Wafer autofocus, levelling, and alignment in a wide range of inspection and metrology applications

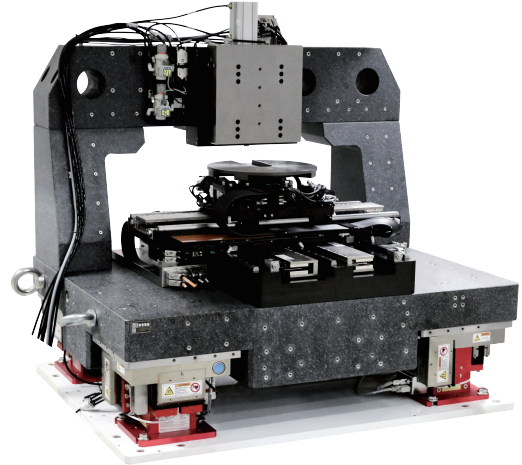
### Wafer Defect Detection Stage



- ▶ Platform compatible with 8/12 inch wafers
- ▶ Integrated XYZT multi-axis motion platform, Z-axis supports cylinder or magnetic spring balance
- ▶ Platform XY uniaxial repetition accuracy  $\pm 1\mu\text{m}$ , low static jitter, low speed fluctuation
- ▶ Optional material transfer unit module, passive shock absorber module

Applicable to: Wafer defect detection equipment used in semiconductor forward process

### Wafer Measuring Equipment Stage

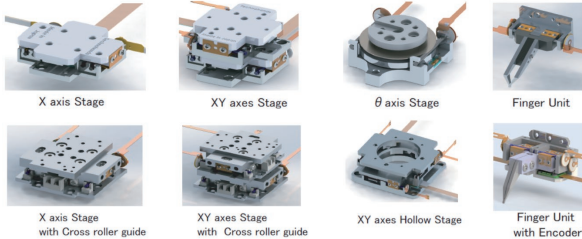


- ▶ Platform compatible with 8/12 inch wafers
- ▶ Integrated XYZT multi-axis motion platform with active shock absorber system
- ▶ Platform XY uniaxial repetition accuracy  $\pm 0.4\mu\text{m}$ , XY orthogonality  $6\mu\text{m}$ , 2D flatness  $20\mu\text{m}$
- ▶ Excellent dynamic performance, high responsiveness, fast setting in place
- ▶ Nanoscale position stability: XY axis  $\pm 2\text{nm}$ , Z axis  $\pm 5\text{nm}$ , T axis  $\pm 0.01\text{arcsec}$

Applicable to: Measuring equipment of integrated circuit production

## ULTRASONIC MOTOR STAGE

### Ultrasonic Motor Stage Series

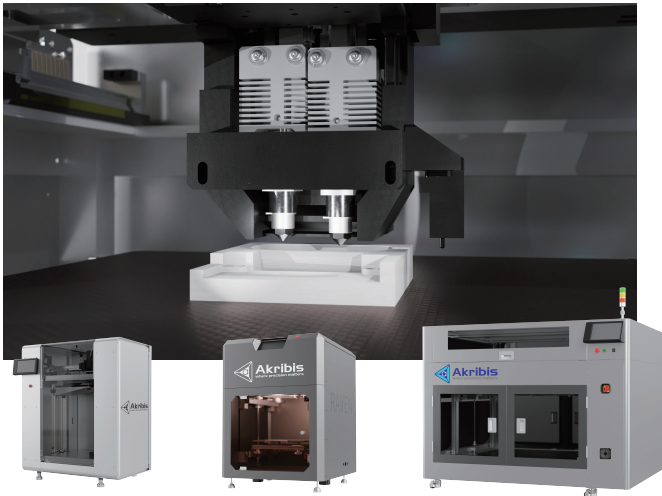


- ▶ Resolution of 5.0μm, 1.0μm, 0.5μm and 0.1μm
- ▶ Stroke range from 4mm to 25mm and stroke range from 3mm to 6mm with maximum opening gripper
- ▶ Repeatability achieves ±3pulse
- ▶ Maximum speed up to 10mm/s

Applicable to: Medical equipments, semiconductor devices and optical components

## SMART MANUFACTURING

### 3D Printing Solutions



Vulture Series

Raven Series

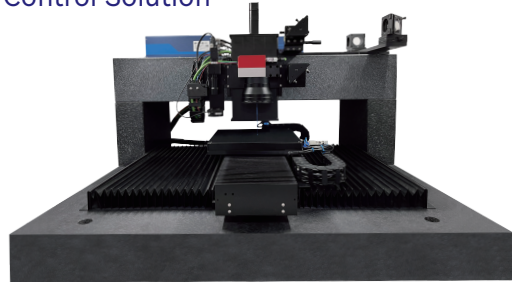
Falcon Series

- ▶ Maximum moving speed up to 1000mm/s, meeting high-speed application requirements
- ▶ Positioning accuracy up to 5μm, ensuring processing quality
- ▶ Linear motor technology, significantly reducing maintenance needs
- ▶ Customizable printing size, adaptable to diverse application scenarios

Applicable to: Production and manufacturing of functional components, concept and prototype verification, and small-batch customized production. Especially some high-demand industries such as aerospace, automotive and medical

## LASER MICROMACHINING WITH PRECISION GALVO AND STAGE

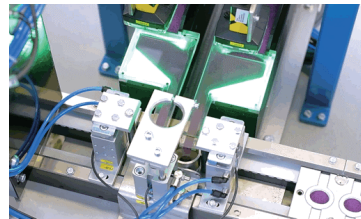
### Synchronized Galvo and Stage Motion Control Solution



- ▶ High precision multiaxis stage with linear motor
- ▶ Synchronized galvo and stage control
- ▶ Stage following error compensation with galvo in real time, realizing high speed and high accuracy scanning
- ▶ Synchronized laser triggering with position feedback (PSO)
- ▶ Optimized trajectory planning algorithm to maximize machining efficiency
- ▶ EtherCAT communication bus with maximum 32 axes
- ▶ Customized graphical user interface
- ▶ G code supported
- ▶ With common machine vision functions, such as on-line measurement, workpiece localization

Applicable to: Laser micro processing of 3C, new energy, precision medical instrument, semiconductor etc.

### Other Cases



Providing innovative feeding solutions to top-level pharmaceuticals industry



Helping FRITSCH to achieve flexible working of SMT mounter

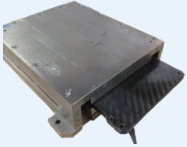


Helping the supplier of optical fiber connector (Radial) to improve the production line

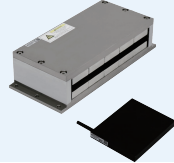


## Special Motors

Linear motor with carbon fibre coil plate



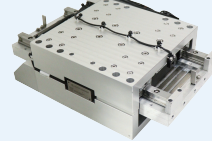
Linear motor with multiple degrees of freedom of motion



Double-sided linear motor, middle-coil configuration, super high thrust density



Double-sided linear motor, middle-track configuration, super high thrust density



Voice coil motor with shaft for medical equipment, friction below 20mN



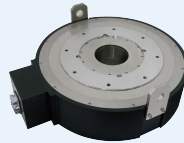
IP68 water resistance rotary motor



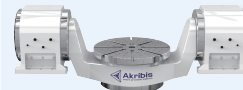
ISO Class 5 cleanroom rated rotary motor



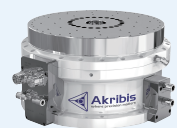
High torque DDR with large diameter over 660mm



ATRT series Dual-axis CNC turntable



ARV series vertical CNC turntable



## Precision Stages for Industries

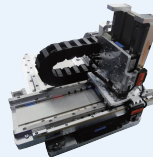
5-axis XYZT for 3D measurement



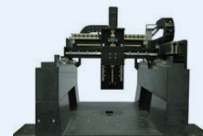
XYZ stage for wafer microscope



XYZ stage for mobile phone parts assembly



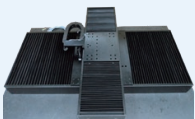
XYZ stage for glue dispensing



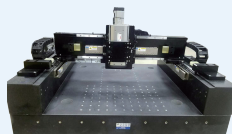
XYZ stage for optical system assembly



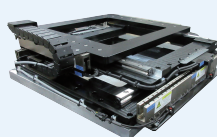
XYZ stage for laser application



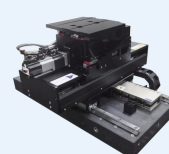
H-drive gantry stage



Hollow XY stage for wafer detection



XYZ stage for wafer detection



G6 FPD stage for laser application with 14 axis



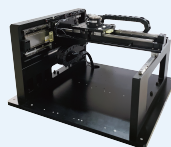
6 DOF mini stage for optical alignment



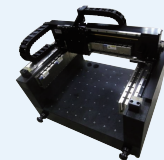
XYZ stage for fiber optic alignment



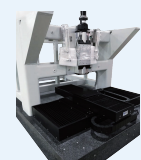
XY stage for glue dispensing



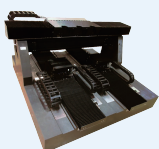
H-drive gantry stage for assembly and testing



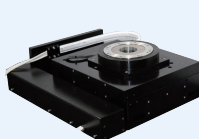
XYT stage for glass laser cutting



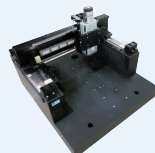
XYZ stage for PCB exposure



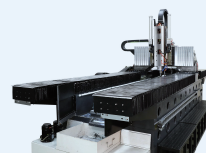
XYZ stage for wafer testing



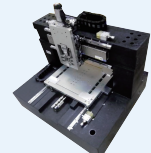
H-drive gantry stage for testing and laser application



LX1030Z gantry machining center



XYZ stage for laser marking and precision parts assembly



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