



Established for over 35 years

Part of the Acal plc Group of Companies

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Precision | Motion | Control

Heason Technology is a world-class distributor, systems integrator and manufacturer of servo motors and drives, actuators, positioning systems and motion control solutions.

Head-quartered from our Slinfold, UK, purpose built facility, Heason Technology provides specialist motion engineering consultancy, design and manufacturing services across a diverse range of market sectors including:

-  Aerospace & Defence
-  Automotive & Transportation
-  Printing & Packaging
-  Renewable Energy
-  Medical & Lab Automation
-  Science & Discovery
-  Autosport
-  Factory Automation

Call us to arrange for one of our application specialists to visit you.

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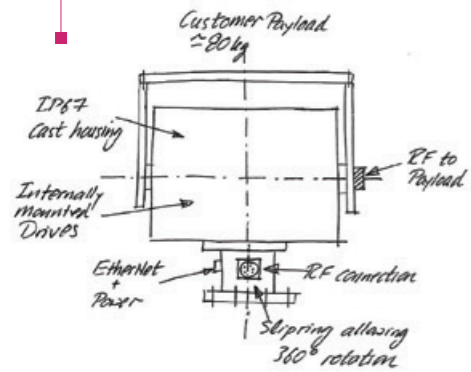
# Heason Motion Engineering

Heason Technology provides specialist motion engineering consultancy, design and manufacturing services for bespoke motion packages.

Our team will guide you through the entire process from defining a specification, to initial concept through to CAD modelling, prototyping, performance testing and cost optimization, and onto full manufacture.

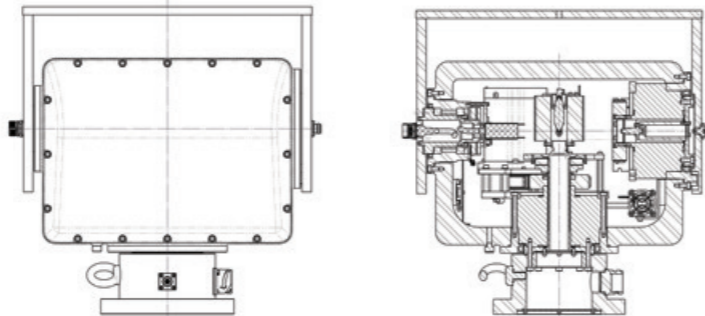
## Initial Concept

Heason motion application specialists will engage with your team to define your requirements and develop initial concepts.



## Design Development

Heason boast unrivalled mechanical, electrical, control and software design capabilities to evolve your concept through design to final manufacture.



## Production

Heason have full manufacturing facilities to produce finished designs delivering fully assembled and tested units to your exact delivery schedules.



## Brushless Servo Motors

Heason Technology offers a comprehensive range of brushless servo motors for both industrial and commercial applications as well as for defence and aerospace requirements.

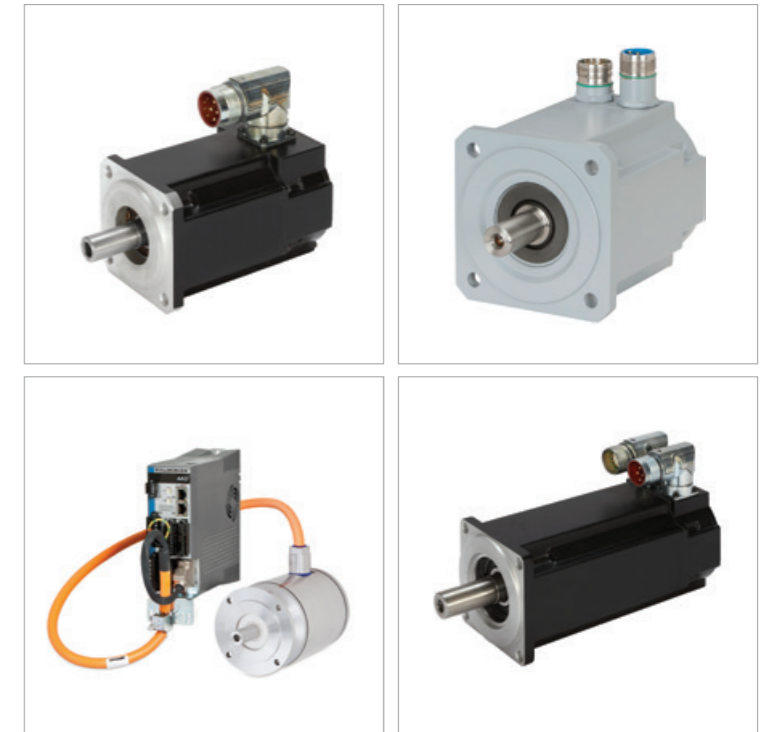
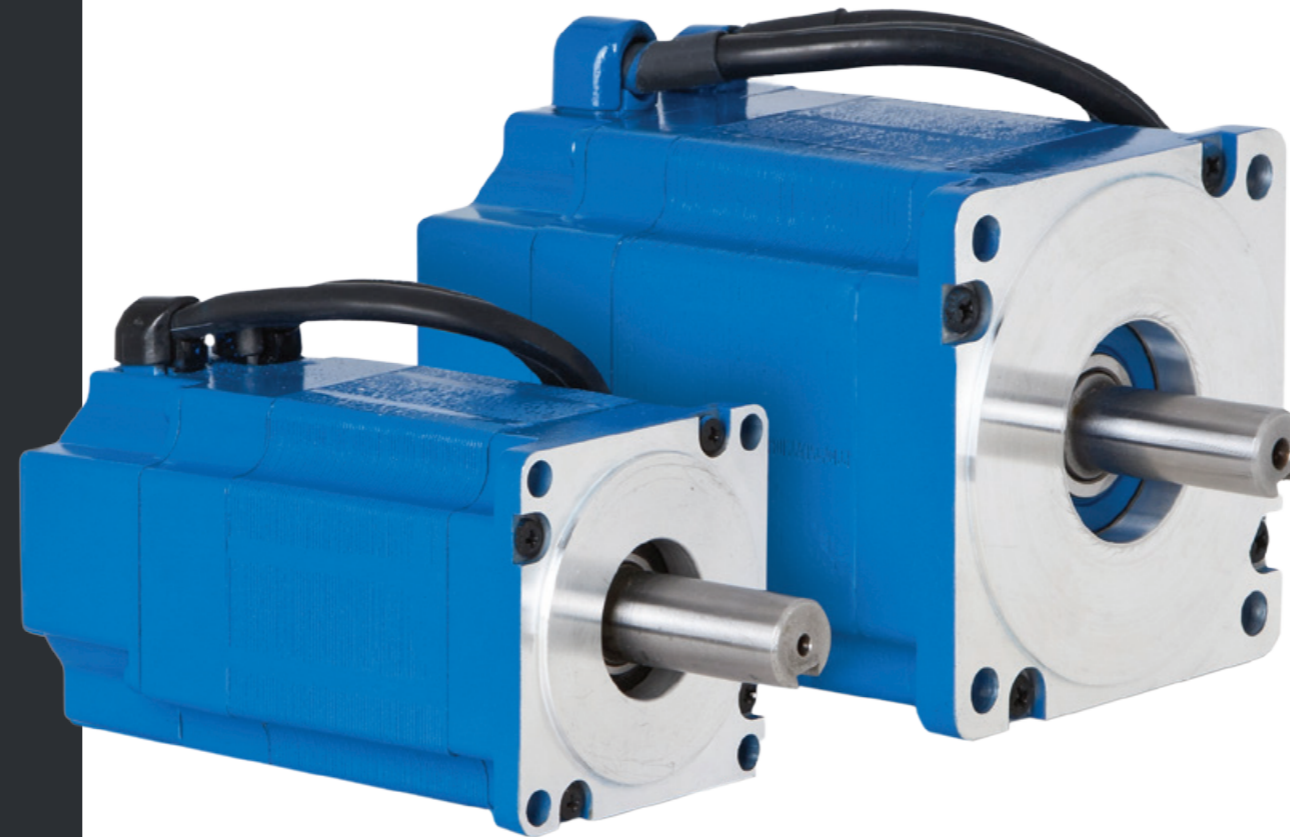
Heason Technology servo motors offer industry leading power density with patented design features driving torque ripple to be almost eliminated. The range includes over 500,000 variants with options on frame size, stack length, mounting and shaft details, winding options, brake options, connector options and multiple feedback options including resolvers, commcoders, single and multi-turn absolute encoders in both optical and inductive formats supporting BISS, Hyperface & EnDAT plus environmental options including wash-down, food-grade and full IP69K hygienic options. And, after all that, there are options to offer customisation including changes to windings, shafts, housings and feedback devices.

Speciality motors include flat armature printed servo motors and fully submersible pressure-compensated motors (to 2,000 metres).

- Rated Torque to 180Nm
- Peak Torque to 668Nm
- 8 Frame Sizes x 4 Stack Lengths
- Multiple Feedback Options
- Wash-Down Option
- Food-Grade Option
- IP69K Hygienic Option
- Holding Brake Option
- Shaft Seal Option
- Multiple Customisation Available

Talk to our team for expert advice on our range of motors.

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## Frameless Servo Motors

Integrate the servo motor into the heart of your machine design. Embedding the motor within your machine, rigidly coupled to the payload, brings many advantages to machine design in terms of performance, operating life, package size and pricing.

Heason Technology offer a comprehensive range of brushless direct drive servo motors for both industrial & commercial applications as well as for defence & aerospace requirements.

Our torque motors can be provided as a basic frameless set i.e. magnets (rotor) and winding (stator) for maximum flexibility where the machine design supports bearings, housing and feedback. Alternatively, Heason Technology can offer all the advantages of a torque motor with all the benefits of a housed package. Heason hybrid, or "cartridge" motors, are housed torque motors with feedback integrated with a quick-connect method to rigidity mount the rotor to the machine payload and it's existing bearing structure. Cartridge motors are perfect for printing, packaging and converting applications especially in wind/re-wind configurations with hugely ranging inertia as material is wound or re-wound.

Linear motors are available in both ironless and ironcore configurations. Ironless for highly dynamic applications with fast accelerations/decelerations without motor attraction and therefore zero cogging. Ironcore for high force applications with extended continuous force capabilities thanks to optional water cooling.

Email our applications team for further information on our range of frameless motors.

[sales@heason.com](mailto:sales@heason.com)

### Classic Torque Motor Design

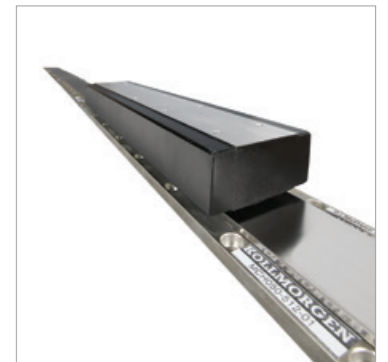
- Rated Torque to 3,450Nm
- Peak Torque to 12,800Nm
- 14 Frame Sizes x 4 Stack Lengths

### Thin Wall Torque Motor Design

- Rated Torque to 100Nm
- Peak Torque to 1,000Nm
- 8 Frame Sizes x 4 Stack Lengths

### Linear Motors

- Ironless & Ironcore Options
- Rated Force to 6,916N
- Peak Force to 8,407N
- Water Cooled Options
- Customisation Options



## Zero Backlash Gears & Actuators

High torque, high single-stage reduction ratios, high transmission stiffness, exceptional power density and zero backlash are key benefits of Heason Technology's epicyclic/coliodal gear systems.

Available as gear-only or integrated with a brushless servo motor, these designs offer machine designers and builders many advantages over traditional gearing. All gears feature an integral output cross-roller bearing with massive axial, radial and moment load capabilities often allowing the complete payload to be supported without additional/separate bearing structures.

The gear design is inherently hollow allowing a clear aperture through the gearbox and motor (if fitted) providing a passage for machine services such as pneumatics, hydraulics, electric cables, fibre-optics etc.

DS actuators feature high performance integrated brushless servo motors with multiple winding options including 24V, 36V, 160V, 300V & 600V DC plus holding brake and feedback options including resolver, commcoder and multi-turn absolute encoder.

Heason Technology also offers a wide range of complementary precision planetary gearboxes from 3:1 through to 100:1 with both in-line and right-angle output options. Planetary gearheads are available with backlash performance to 4 arc-minutes and with load capacity to 5,500Nm. Many variants within our portfolio are available on our Express Delivery Programme, meaning shipment from the factory within 24 hours.

Call our team for detailed gear & actuator selection advice.

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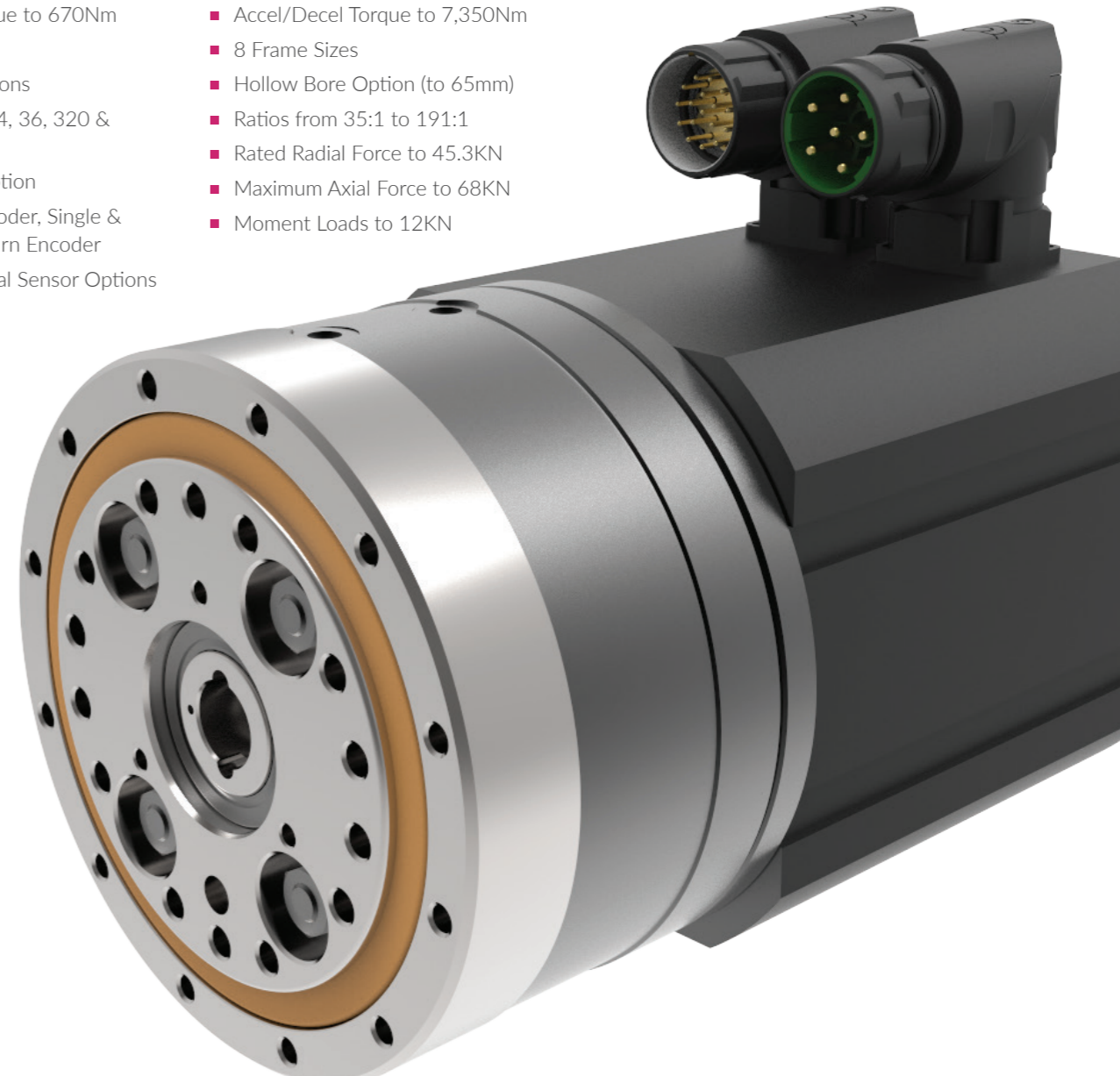


### Geared Actuator Options

- Accel/Decel Torque to 670Nm
- 5 Frame Sizes
- Hollow Bore Options
- Motor Voltages 24, 36, 320 & 560V DC
- Holding Brake Option
- Resolver, Commcoder, Single & Absolute Multi-Turn Encoder
- Integrated Thermal Sensor Options

### Gear Options

- Accel/Decel Torque to 7,350Nm
- 8 Frame Sizes
- Hollow Bore Option (to 65mm)
- Ratios from 35:1 to 191:1
- Rated Radial Force to 45.3KN
- Maximum Axial Force to 68KN
- Moment Loads to 12KN



# Servo Drives & Controllers

Heason Technology servo drive portfolio encompasses basic current drives through to sophisticated multi-axes motion control systems supporting both centralised and decentralised control philosophies.

Our drives can operate from both AC and DC power sources allowing flexibility from factory installations at global voltage levels through to mobile vehicle/battery based applications.

All drives and controllers are fully programmable to allow easy configuration and programming for the application and are supported by comprehensive Windows PC based development environments, as well as exceptional technical support from our applications team.

Our drives offer support for all motor types, all feedback types and all command methods.

### Features

- Peak Power to 65KW
- DC & AC Operation
- Support IEC 61131-3 Programming Standards

### Interfaces

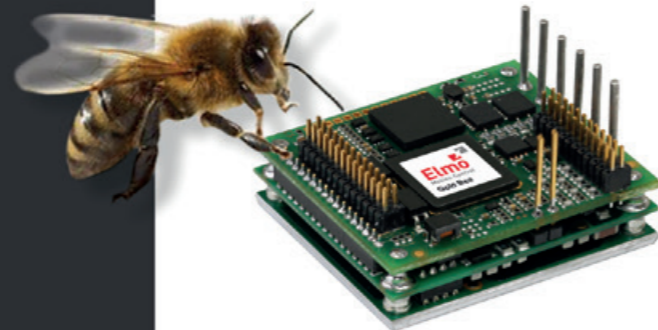
- Analogue
- Pulse & Direction
- PWM
- RS232
- CAN Open
- Ethernet
- EtherCAT
- EtherNET IP
- ProfiNET

### Supported Feedback Devices

- Potentiometer
- Commcoder
- Resolver
- EnDAT
- BISS
- Hyperface

### Support Motor Technology

- Brush
- Brushless
- Stepper
- Linear
- Induction

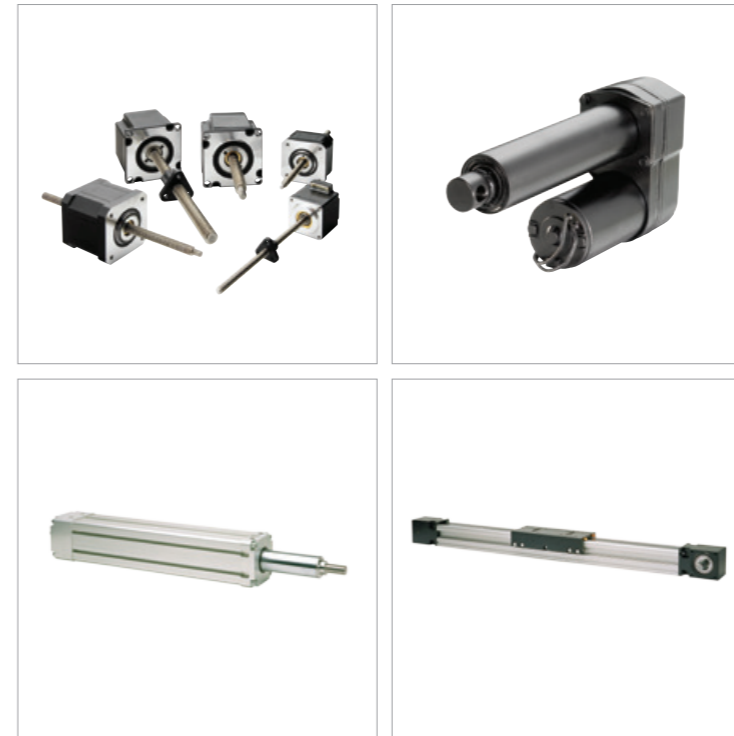


Looking for technical data on a specific servo drive or controller? Email us.

[sales@heason.com](mailto:sales@heason.com)

## Linear Actuators & Units

Linear Actuators from Heason Technology include both industrial and precision devices. From basic acme-threaded, DC motor actuators typically deployed in mobile off-highway applications through to highly dynamic, precision, ballscrew and servo motor driven devices used throughout hi-tech industry.



Rodded actuators are complemented by our range of linear positioning units driven via belt, ballscrew or direct-drive linear servo motors.

### Industrial Actuators

- Maximum Dynamic Load 6,800N
- Motor Voltages 12, 24 & 36VDC
- Clevis or Trunnion Mount
- Limit Switch & Feedback Options

### Precision Actuators

- Rod Strokes to 2,000mm
- Maximum Load to 60,000N
- Maximum Speed to 2,000mm/sec
- Repeatability to 50µm
- Wash-Down Options

### Linear Units

- Strokes to 12.0 Metres
- Repeatability to 50µm
- Speeds to 5.0 Metres/Second
- Dynamic Carriage Load to 9,300N
- Multiple Carriage Options
- Dedicated Vertical Lifting Units

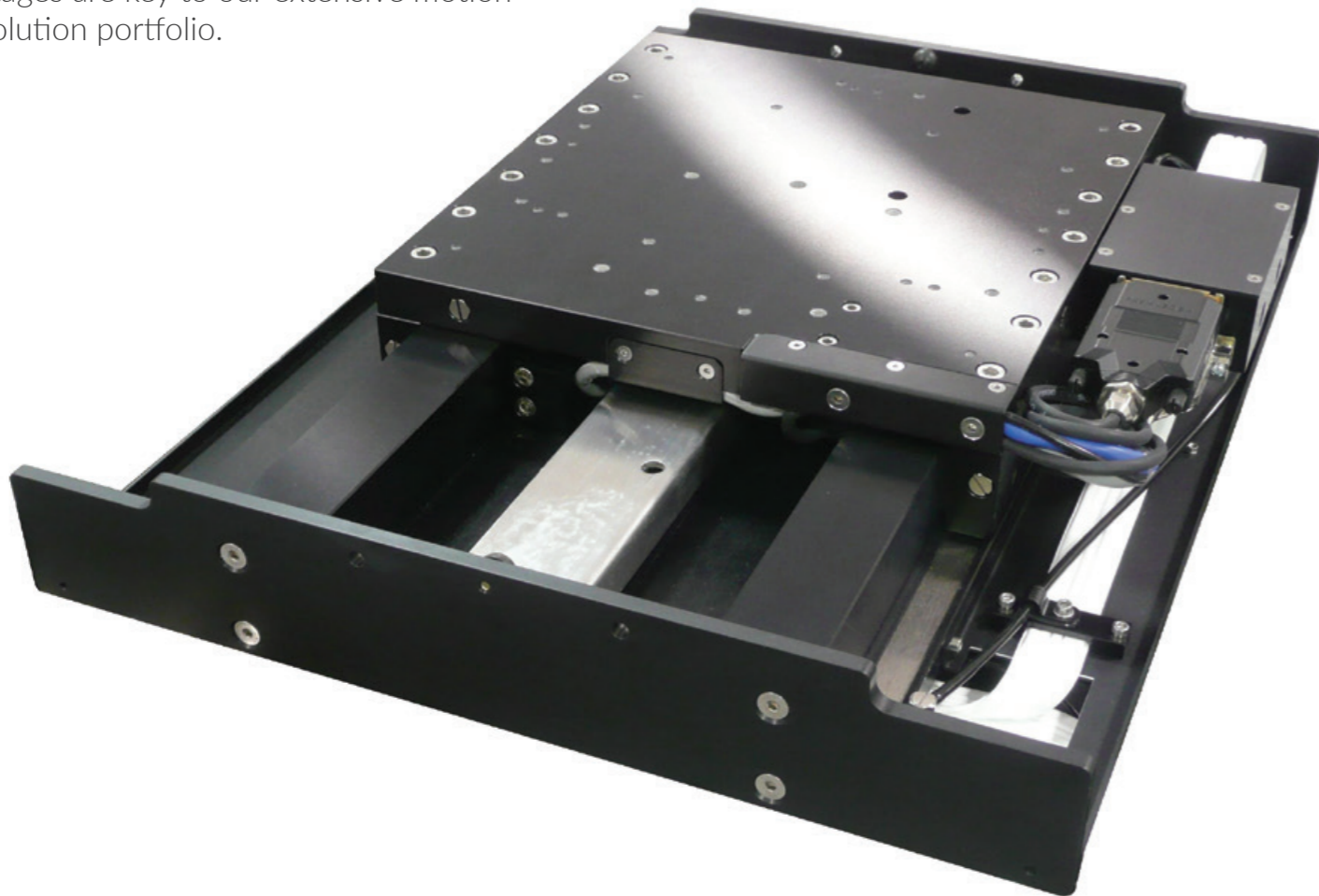
Call our applications team for specialist linear actuator selection advice.

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## Rotary & Linear Stages

Precision Rotary & Linear positioning stages are key to our extensive motion solution portfolio.



Our range extends from high precision screw driven stages with mechanical bearings through to ultra-high performance direct-drive linear motor stages with air-bearings and laser interferometry. Linear stages are available in single axis as well as monolithic XY and Z wedge configurations.

### Rotary Stages

- Direct Drive & Geared Solutions
- Stepper & Servo Motor Options
- Thro' Bore Option
- Resolution to 0.2 arc-sec
- Bi-Directional Repeatability  $\pm 5.0 \mu\text{rad}$

### Linear Stages

- Leadscrew/Ballscrew Options
- Direct Drive Linear Motor Options
- Positional Accuracy to  $\pm 1 \mu\text{m}$
- Bi-Directional Repeatability to  $\pm 0.25 \mu\text{m}$
- Single Axis, Compound XY and Z Variants
- Linear & Rotary Encoder Options
- Mechanical & Air Bearing Options

### Piezo Driven Stages

- Ultrasonic Standing Wave Piezo Electric Motor
- Linear Travel to 200mm
- Encoder Resolution  $0.1 \mu\text{m}$  Std. (option to 10nm)
- Bi-Directional Repeatability  $1.0 \mu\text{m}$  Std. ( $0.1 \mu\text{m}$  option)
- Stage Velocity to 250mm/sec
- High Vacuum & UHV Versions Available
- Rotary, Z-Wedge & Tip/Tilt Stages Available

Email our team for detailed advice on rotary & linear stages.  
[sales@heason.com](mailto:sales@heason.com)

## Slip Rings & Position Sensors

Motion control requires accurate position data via feedback devices. For our range of frameless motor technology, both linear and rotary, Heason Technology offer an extensive range of magnetic optical and inductive feedback devices.

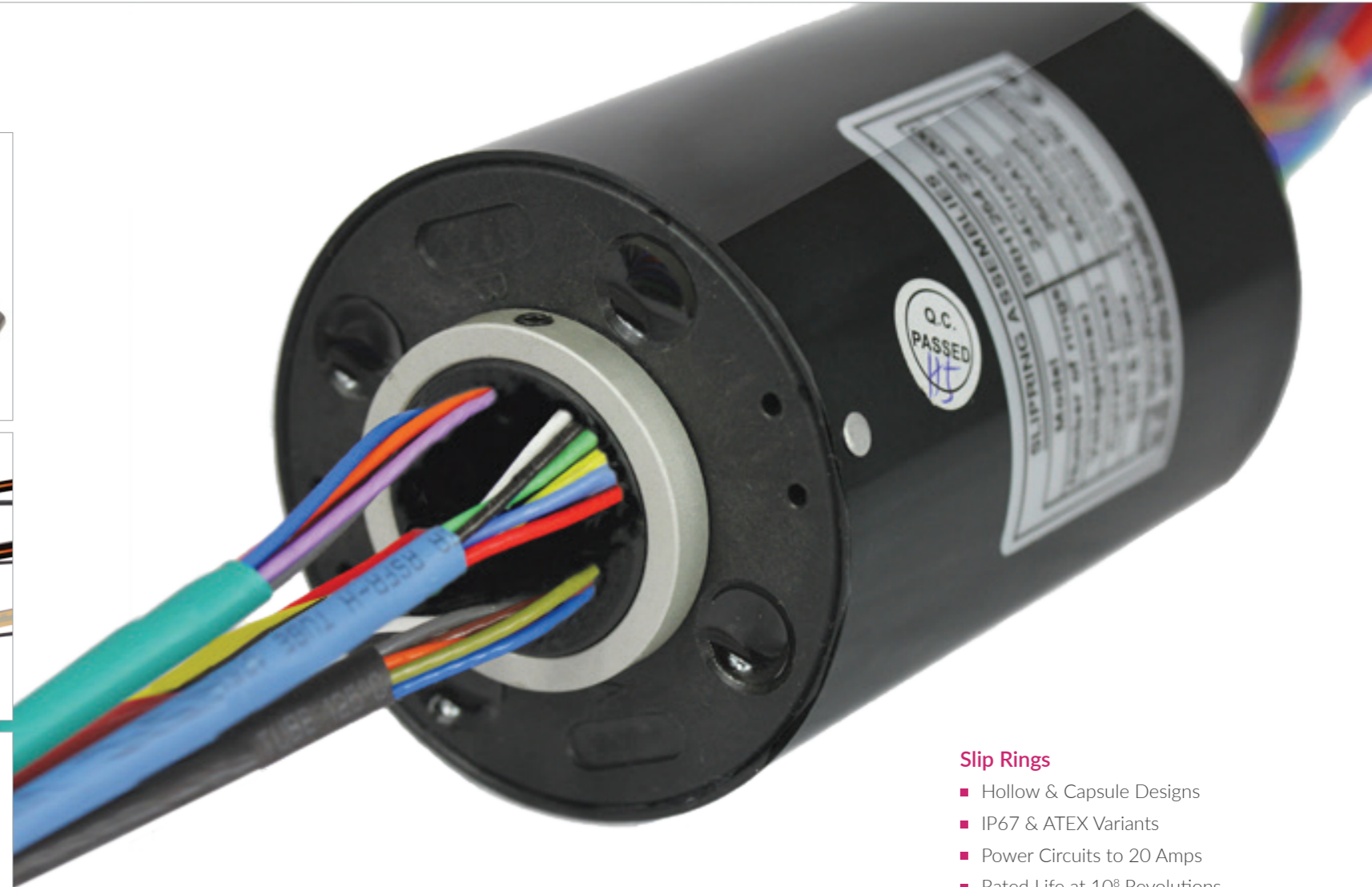
Slip rings are often an integral component for modern production equipment conveying electrical signals from a rotating element of the machine to a static part. Our comprehensive range of slip rings include variants with hollow shafts as well as units that support fibre-optic, video, data, pneumatics and hydraulics.

### Feedback

- Linear & Rotary Feedback
- Housed & Frameless Designs
- Increment & Absolute Variants
- Optical, Magnetic & Inductive Techniques
- Analogue, Digital & Serial Comms

For specialist selection advice, email us your slip ring or position sensor requirements.

[sales@heason.com](mailto:sales@heason.com)



### Slip Rings

- Hollow & Capsule Designs
- IP67 & ATEX Variants
- Power Circuits to 20 Amps
- Rated Life at 10<sup>8</sup> Revolutions
- Data – Megabit & Gigabit Variants
- Fibre Optics, RF & Video
- Customisable



# Custom Motion Solutions

Heason Technology offers a full design and build service for custom actuators, motion platforms, associated control systems and application software.

For over 35 years our in-house motion application engineers have used their expertise to deliver to both OEM and End User customers bespoke motion packages engineered specifically to their requirements from both an engineering and a commercial perspective.

The next few pages provide a brief glimpse into our comprehensive solutions portfolio and show examples of our motion engineering capabilities.

All design work is undertaken by our in-house team who have considerable experience with hundreds of successful projects within multiple industries, applications and environments.

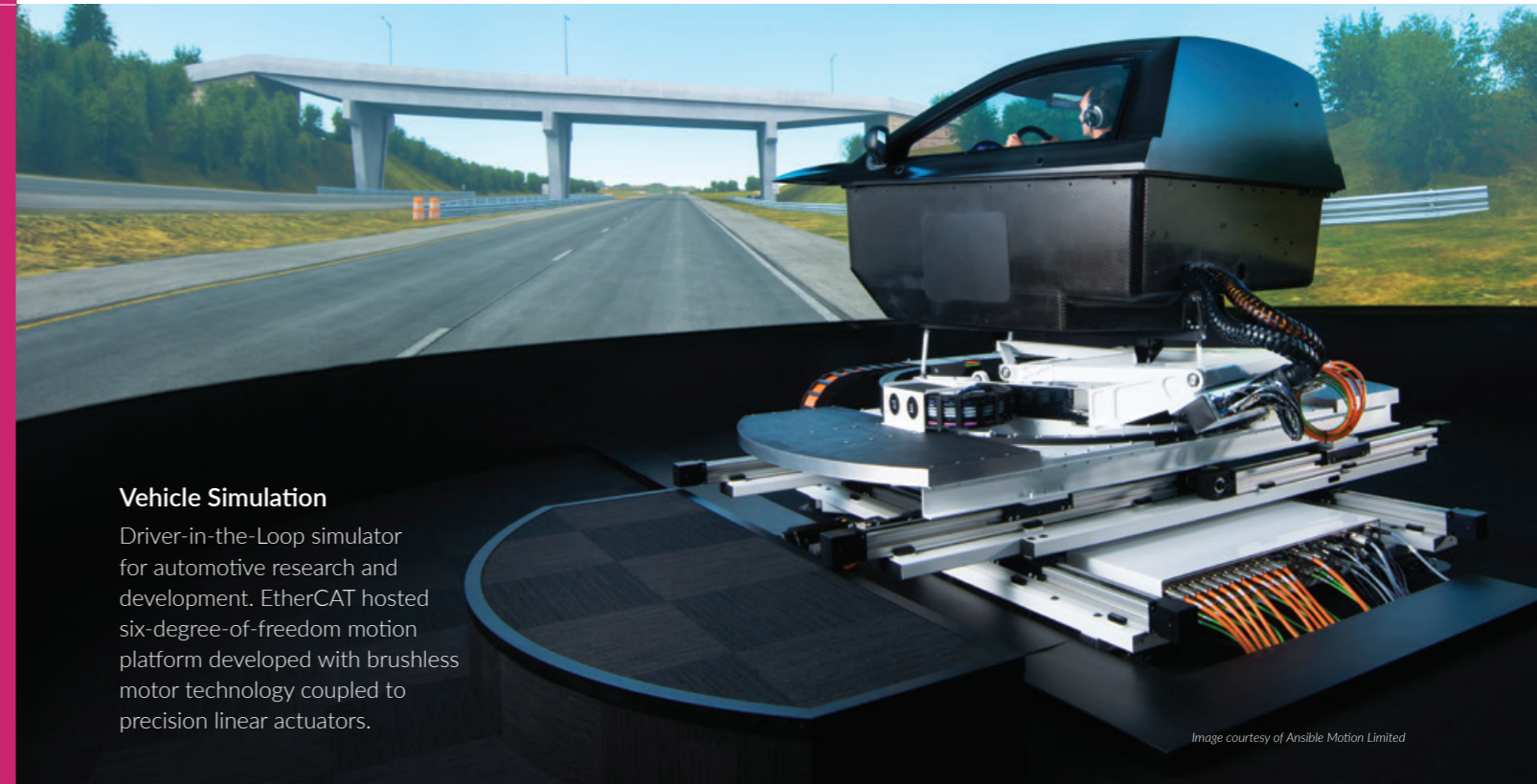
Our services range from consultancy, through to needs analysis and specification definition, to design, prototype build, design verification and validation, through to series production and stock/logistics management.

We can provide a full suite of support services including mechanical, electrical, electronic and control system design for electrical motion, positioning and actuator systems.

Heason Technology deploy with the latest 3D CAD modelling, design, FEA and motion simulation tools to allow our team to optimise designs for customer applications.

### On the next few pages, you will see applications including:

- Pan & Tilt Motion Platforms
- Direct Drive Rotary Actuators
- Motion Control/Drive Cabinets
- Submersible Actuators
- Medical/Pharmaceutical Actuators
- Underwater Vehicle Control Surface
- Optical/Laser Instrumentation Focusing
- Rail Track Actuators
- Automotive
- Solar Panel Manufacturing



### Vehicle Simulation

Driver-in-the-Loop simulator for automotive research and development. EtherCAT hosted six-degree-of-freedom motion platform developed with brushless motor technology coupled to precision linear actuators.

*Image courtesy of Ansible Motion Limited*

For further information please call our applications team.

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### Motion Package

Custom, submersible, brushless, servo motor design with integrated torque sensors and an accompanying control, drive & HMI package.



### “Last Train”

Wirelessly controlled, diamond glass engraving XY servo motion frame, developed as a central opening exhibit for the 55th Venice Biennale Art Exhibition.



# Custom Motion Solutions

Heason Technology's motion design experience covers numerous applications over multiple industrial sections. The next few pages show examples from Rail, Renewable Energy, Military & Submersible Vehicles, Radar, Aerospace, Medical, Automotive and High Vacuum applications.

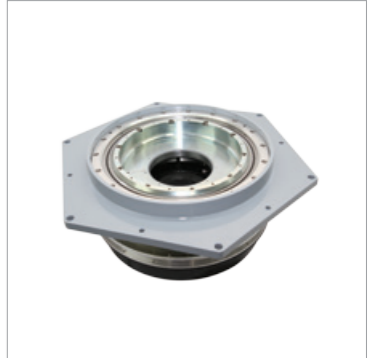


**Rail Actuator**  
Servo-electric, linear actuator with integrated drive electronics and on-board diagnostics.

- 01 **Laser Telescope**  
Precision laser beam steering and beam focusing assembly.
- 02 **Military Vehicle Retrofit Motor**  
Ruggedised brushless servo motor with integrated holding brake & EnDat absolute encoder.
- 03 **Submersible Hydroplane Actuator**  
Oil filled, pressure compensated, geared servo actuator incorporating dual resolver feedback.
- 04 **Dual Axis Driver Module**  
Integrated EtherCAT motion controller/ servo drives with EnDAT position feedback.
- 05 **Direct Drive Hollow Shaft Motor**  
Brushless, frameless torque motor integrated into application specific housing complete with BISS absolute encoder and large hollow through-bore for customer's payload.



- 01
- 02
- 03
- 04
- 05



# Custom Motion Platforms



**Drive Module**

Four axis EtherCAT servo control/drive module for aircraft simulator.



**Hydraulic Servo Pump Motor**

Brushless DC servo motor with integral drive and control.



**PV Inspection Stage**

Compact XY stage with theta inspection platform driven by smart stepper motor.



**Medical Tablet Press Actuator**

Dosage control press actuator complete with EnDAT interface.



**Delta Axis**

Automotive zero backlash servo actuator with 495Nm continuous output torque.



Image courtesy of Martin-Baker Aircraft Company Limited



# Motion in High Vacuum

Many scientific, discovery and research applications require processes to be undertaken in-vacuum environments such as semi-conductor manufacturer, X-ray photoelectron spectroscopy (XPS), electron beam microscopes and ion deposition.

Traditionally, motion in-vacuum is achieved with mechanical feedthroughs and bellows allowing the motors to be in atmosphere with a mechanical linkage/connection to the payload to provide motion in-vacuum. This technique provides some complications to the machine/process developer.

Whilst supporting mechanical feedthrough solutions, Heason Technology also offer motion solutions with motors located within the vacuum environment, allowing more complex moving structures to be realised by process designers without the limitation of restrictive mechanical feedthroughs. Our designs only require electrical connections through to atmosphere via straight-forward electrical feedthroughs.

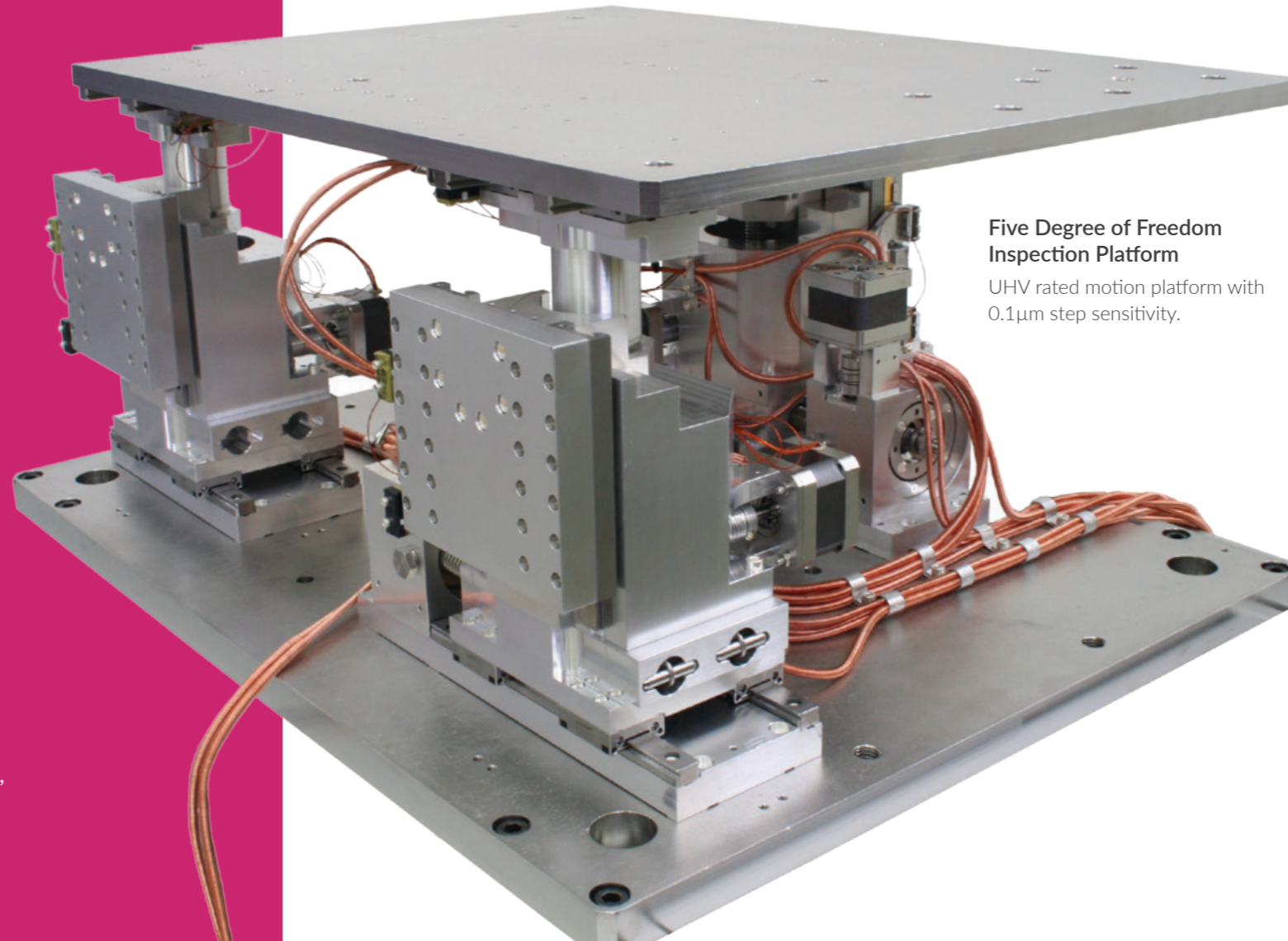
We can offer both motion components such as piezo motors and optical encoders through to complete turn-key in-vacuum motion solutions three of which are illustrated on this page.

Our in-vacuum capabilities include:

- Linear & Rotary Motion
- Measurement Resolution to 10nm
- UHV Vacuum Level to  $10^{-10}$  Torr
- Bake-out Temperatures to 125°C
- Low/Zero Magnetic Designs
- High In-Position Stability

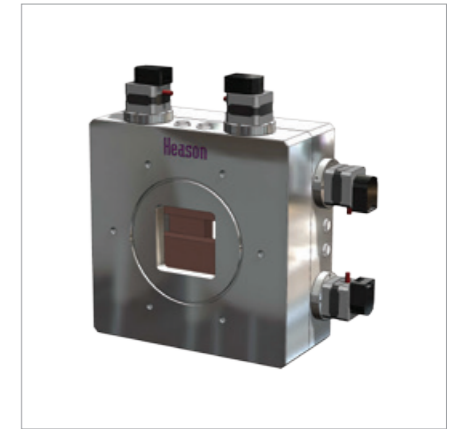
To receive expert advice and further information on all of our products, please contact our applications team.

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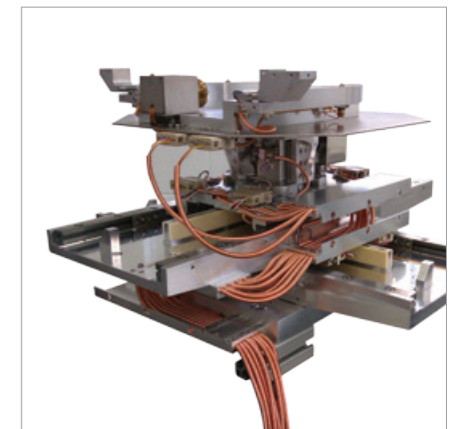
**Five Degree of Freedom Inspection Platform**

UHV rated motion platform with 0.1µm step sensitivity.



**Four Axis Beamline Slit**

High vacuum rated neutron beam slit package.



**Wafer Inspection Stage**

UHV rated XYZ & rotary platform for X-ray photoelectron spectroscopy.