

Robotics Drives - Products and Services

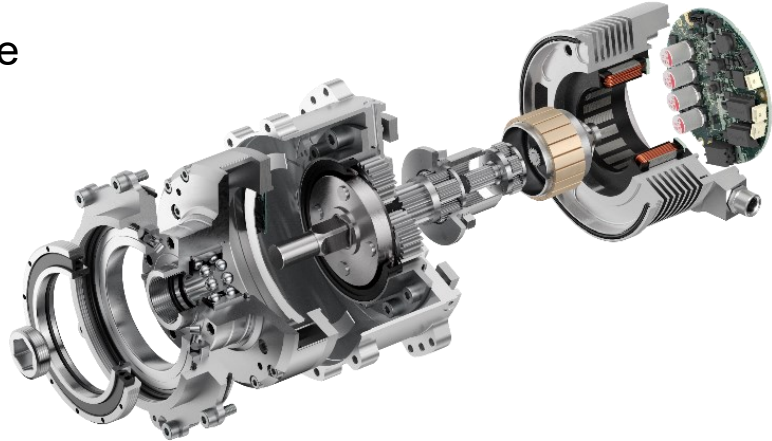
Your Partner for Robotics Excellence

At **maxon**, we pride ourselves as a globally acclaimed leader in designing and manufacturing high-performance drive systems.

Our expertise lies in delivering torque-dense, integrated and compact actuation solutions, meticulously optimized for the robotics market. Our commitment to technological excellence ensures that our products are not just robust but also cost-effective, aligning with the evolving needs of the industry.

What sets our drive systems apart is our deep vertical integration. This intrinsic control over every aspect of design and production empowers us with unique capabilities:

- Integrated, compact robotic drive systems with a focus on torque density and lightweight construction.
- Customization at scale: Understanding that no two robotic applications are the same, we offer unparalleled customization. Our agile production can adapt to your specific needs, ensuring that the final product aligns perfectly with your application.
- A non-negotiable focus on a high production quality, consistent performance, and robust, lifetime-tested systems.
- Attractive cost efficiency: Leveraging streamlined processes, deep vertical integration, and advanced technologies, we offer competitive pricing and a low total cost of ownership - without compromising quality.



Robotic Drive Systems

High Efficiency Joint Family

HEJ Series

These are highly compact, integrated and efficient robotic drive systems that contain all subsystems to provide a full motion solution, such as electronics, motor, gearing and sensing. These drives are fully enclosed, ingress- and impact-rated, and designed for continuous operation and active thermal cooling if necessary. They offer high robustness and a long operating lifetime. Controlled via *EtherCAT*, they implement a state-of-the-art impedance controller optimized for modern robotics and small sim2real gaps.



- Up to 13 rad/s | Up to 140 Nm | 20 V – 60 V | IP67 Ingress Protected
- Efficiency up to 86% | Ideal for Battery-Powered Systems
- Integrated Absolute Joint Encoder and Cross-Roller Bearing
- Highest Torque and Power Densities
- Autonomous Mobile Robots | Humanoids | Exoskeletons | Mobile Manipulation
- Details and datasheets: <https://global.maxongroup.com/high-efficiency-joints>

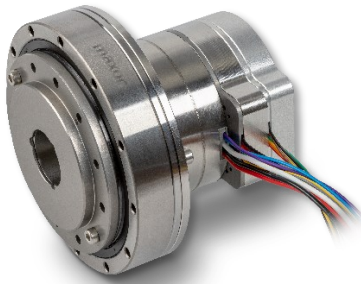
High Precision Joint Portfolio

HPJ-DT Series

Our HPJs are composed of a set of actuators that are highly customizable and lightweight, featuring high-resolution absolute joint encoders for precise control, engineered without joint backlash, and designed to offer high dynamics and exceptional torque density.

- Hollow Shaft | Integrated Joint Output Bearing | Motor Encoder
- Configurations: Electronics | Sensors | Brakes | Safety
- Lightweight Manipulation | Medical & Surgical Robots | Industrial Robots | Collaborative Robots





Available in Different Gear Ratios | Deep System Integrations Possible | Large Hollow Shaft | Highly Dynamic | Includes: Motor, 2x Encoder, Gear, Output Bearing | Options for Brakes | Customization Options for Functional Safety.

System	Peak Joint Torque, Repetitive	Peak Joint Velocity	Mass	Outer Dia	Length
DT38S-WGA14	12 Nm – 19 Nm	8.8 rad/s – 17.5 rad/s	0.9 kg	74 mm	74 mm
DT38M-WGU14	23 Nm – 36 Nm	8.8 rad/s – 17.5 rad/s	1.0 kg	74 mm	86 mm
DT50S-WGA20	39 Nm – 64 Nm	4.2 rad/s – 13.3 rad/s	1.5 kg	94 mm	81 mm
DT50M-WGU20	27 Nm – 120 Nm	4.2 rad/s – 22.0 rad/s	1.8 kg	94 mm	86 mm

Frameless Dynamic Torque Motors

EC frameless DT Portfolio



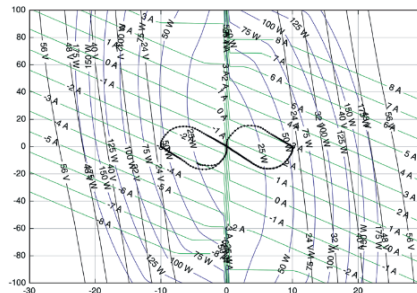
Our frameless motor portfolio has been specifically designed for robotics applications. The system offers unmatched torque density and dynamics, with best-in-class efficiency – key parameters for every robotics product. It can be flexibly integrated into customer designs thanks to well-designed tolerance chains, and provides the possibility to pair the motor with a well-tailored encoder system. We provide different mounting flanges, or the possibility to pot the motor directly into customer parts. Heat transfer and thermal protection is excellent, thanks to the potting and integrated winding temperature sensor. This allows to safely push the system to its limits.

	DT38S	DT38M	DT50S	DT50M	DT65S	DT65M	DT85M	DT85L
OD (mm)	42	42	54	54	70	70	90	90
Rotor ID (mm)	17	17	28	28	35.5	35.5	47	47
M_{sat} (Nm)	0.5	1.0	1.5	2.2	2.6	4.9	5.6	9.8
30% linearity deviation								
Terminal Resistance, Phase-Phase (Ω)	0.26	0.37	0.58	0.76	0.33	0.47	0.16	0.22
Torque Constant, FOC, Amplitude (mNm/A)	16.5	32.2	60.4	92.6	88.1	157	126	219
Mass Stator+Rotor, Without Flange (g)	71	104	123	163	226	339	526	774

Robotics Simulations & Services

By providing a comprehensive system simulation toolchains and robotics-centric models, we will find the right actuation solution for modern robotics systems.

- Actuator Simulation Models (Isaac, Gazebo etc.)
- Requirements Exploration and Validation | Trade-Offs
- Systems Engineering | Risk Assessments and Safety
- Sizing and Modelling of Complex Robotics Kinematics
- Testing and Verification of Full Systems
- Custom Firmware and Control Topologies



Systems Design & Manufacturing

Thanks to our ability to create highly integrated robotic drive systems, and our passion for optimal customer solutions, we also provide systems design and manufacturing services for more complex robotic sub-assemblies. This allows our customers to focus fully on robotics, while we enable them to scale quickly with high-performance, well-optimized and vertically integrated systems.



What Drives You?

We are always curious and passionate about your challenges and want to enable you to quickly scale your robotics solution with the *right* actuation systems.

You can always reach us directly at:

robotics@maxongroup.com

Further details and related products can also be found online:

robotics.maxongroup.com

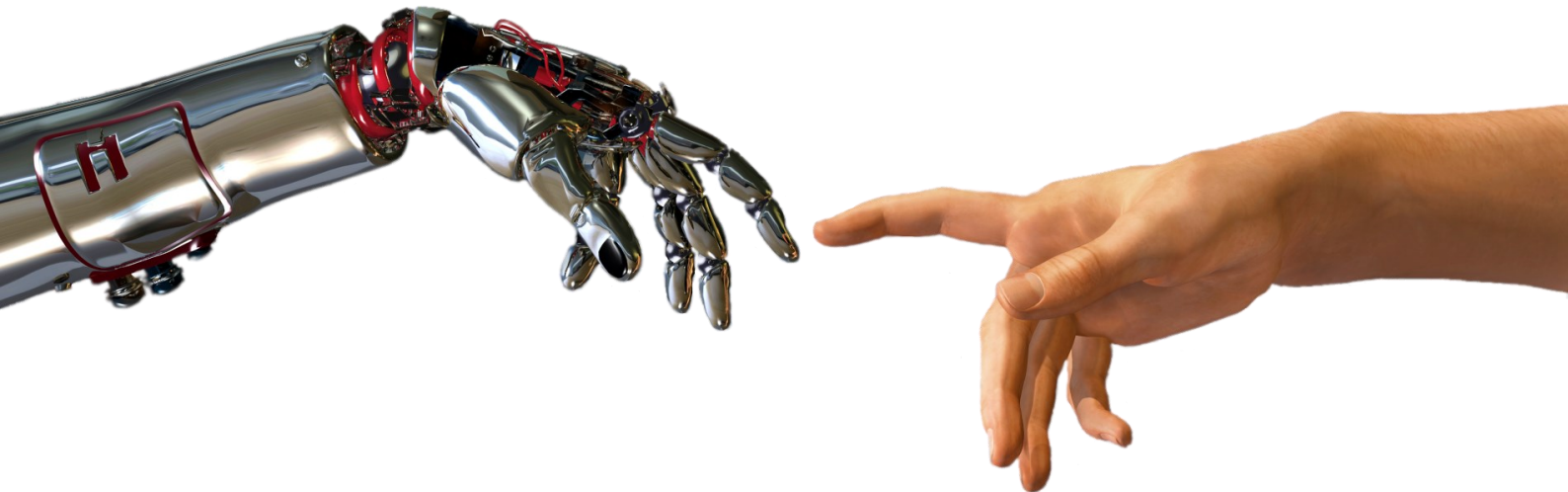
CUSTOMER STORY: HEXAGON & MAXON

In 2025, Hexagon revealed their humanoid robot, AEON. This system has been specifically designed to meet real-world customer needs and address labour shortages. AEON combines Hexagon's world-class sensor suite with advanced locomotion, AI-driven mission control, and spatial intelligence to deliver exceptional agility, versatility, and awareness. Hexagon's Robotics division has established strong partnerships with technology leaders NVIDIA, Microsoft, and **maxon** to bring AEON to the market. AEON is powered by NVIDIA accelerated computing, NVIDIA Omniverse, and NVIDIA Jetson. Microsoft Azure's platform enables scalable development and on-demand training of AEON's capabilities. And **maxon's** next generation actuators power AEON's unique and efficient locomotion across multiple environments.



CUSTOMER STORY: ANYBOTICS & MAXON

In 2020, ANYbotics and maxon entered into a close, long-term collaboration and are thus strengthening Switzerland as a prime location for robotics. One of the decisions made by the two partners is that maxon, as global drive specialist, will handle the future development and production of the actuators for ANYmal. ANYmal is an autonomous, four-legged robot that is capable of inspecting and monitoring industrial systems and is destined to also take on dangerous maintenance tasks in the future. The robot can cope with difficult infrastructures such as stairs and inclines, and is used in a wide variety of industries.



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