# HEBI ROBOTICS

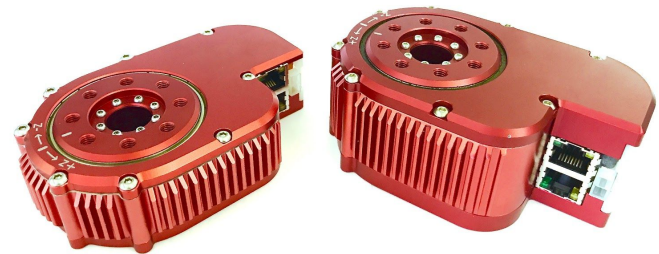## X-SERIES ACTUATOR®

This series of powerful robot actuators allows engineers, researchers, and industrial integrators to quickly and easily create world-class custom robots of any configuration. X-Series Actuators® are packed with sensors that enable controllable position, velocity, and sensitive torque control as well as three axis inertial measurement.

Each actuator is a series-elastic actuator that integrates a brushless motor, gear train, spring, encoders, and control electronics into a compact package that runs on anything from 24V-48V DC and communicates using standard 10/100Mbps Ethernet.

The X-Series Actuator® is designed to function as a full-featured robotic component as opposed to a simple servo motor. The output rotates continuously, requires no calibration or homing on boot-up, and contains a thru-bore for easy daisy-chaining and wiring. This enables these actuators to be used in everything from wheeled robots to multi degree of freedom collaborative robotic arms.

HEBI Robotics provides cross-platform software tools that make configuring and controlling the X-Series a breeze, with features such as live plotting, APIs for MATLAB, ROS, C/C++, and Python.

Contact: info@hebirobotics.com

# X-SERIES ACTUATOR® — TECHNICAL SPECIFICATIONS

| CONFIGURATION | X5-1 | X5-4 | X5-9 | X8-3 | X8-9 | X8-16 |
|---|---|---|---|---|---|---|
| Peak Torque | 2.5 N-m | 7 N-m | 13 N-m | 7 N-m | 20 N-m | 38 N-m |
| Cont. Torque | 1.3 N-m | 4 N-m | 9 N-m | 3 N-m | 8 N-m | 16 N-m |
| Max Speed | 90 RPM | 32 RPM | 14 RPM | 84 RPM | 30 RPM | 15 RPM |
| Mass | 330 g | 345 g | 360 g | 455 g | 475 g | 490 g |
| Dimensions | 110mm x 73mm x 31mm<br>15mm hollow bore | | | 110mm x 73mm x 45mm<br>15mm hollow bore | | |
| Power | 24-48V DC<br>Cont. Current: 0.5 A @ 36V<br>Peak Current: 1.6 A @ 36V | | | 24-48V DC<br>Cont. Current: 1.3 A @ 36V<br>Peak Current: 3.0 A @ 36V | | |
| Temperature | -10°C to 50°C Ambient | | | | | |
| Communication | 100 Mbps Ethernet (dual port) | | | | | |
| Angular Resolution | 0.005° | | | | | |
| Torque Resolution | 0.01 Nm | | | | | |
| Backlash | +/- 0.25° | | | | | |
| Sensing | Angular Position (multi-turn absolute, +/- 4 turns)<br>Angular Velocity<br>Output Torque<br>3-axis Accelerometer / Gyro<br>Temperature<br>Voltage<br>Current | | | | | |
| API Support | MATLAB (Windows / Linux / OS X)<br>ROS (Linux)<br>Python (Windows / Linux / OS X)<br>C/C++ (Windows / Linux / OS X)<br>C# (Windows)<br><br>Additional technical documentation at docs.hebi.us | | | | | |

Each individually purchased X-Series Actuator® includes a standard connection kit: 3' Ethernet cable, 12" Power cable, 12" Power pigtail and Power splitter board.
Updated on June 25, 2019.  Specifications subject to change without notice.