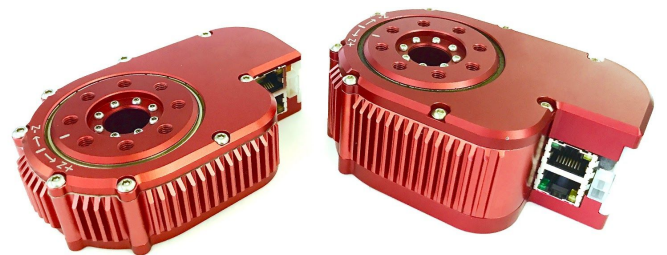


# HEBI ROBOTICS

## X-Series Industrial Smart Actuator

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

Each module is a series-elastic actuator that integrates a brushless motor, geartrain, spring, encoders, and control electronics into a compact package that runs on anything from 18V-50V DC and communicates using standard 10/100Mbps Ethernet.



The X-Series module 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 modules 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, and C/C++.



Contact: [info@hebirobotics.com](mailto:info@hebirobotics.com)

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[www.hebirobotics.com](http://www.hebirobotics.com)

# X-Series Actuators - Technical Specifications

	X5-1	X5-4	X5-9	X8-3	X8-9
<b>Dimensions</b>	31 mm x 110mm x 73mm 15mm hollow bore			45mm x 110mm x 73mm 15mm hollow bore	
<b>Mass</b>	345 g	340 g	360 g	480 g	480 g
<b>Actuation</b>	Peak Torque: 2.5 N-m Cont. Torque: 1.3 N-m Max Speed: 90 RPM	Peak Torque: 7 N-m Cont. Torque: 4 N-m Max Speed: 32 RPM	Peak Torque: 13 N-m Cont. Torque: 9 N-m Max Speed: 14 RPM	Peak Torque: 7 N-m Cont. Torque: 3 N-m Max Speed: 84 RPM	Peak Torque: 20 N-m Cont. Torque: 8 N-m Max Speed: 30 RPM
<b>Power</b>	18-50V DC Cont. Current: 0.8 A @ 24 V Peak Current: 2.4 A @ 24 V			18-50V DC Cont. Current: 2.0 A @ 24 V Peak Current: 4.5 A @ 24 V	
<b>Temperature</b>	-10°C to 50°C Ambient				
<b>Communication</b>	100 Mbps Ethernet (dual port)				
<b>Angular Resolution</b>	0.005°				
<b>Torque Resolution</b>	0.01 Nm				
<b>Backlash</b>	+/- 0.25°				
<b>Sensing</b>	Angular Position (multi-turn absolute, +/- 4 turns) Angular Velocity Output Torque 3-axis Accelerometer 3-axis Gyro Temperature Voltage Current				
<b>API Support</b>	Matlab (Windows / Linux / OS X) ROS (Linux) C/C++ (Windows / Linux / OS X) C# (Windows) Python (in development)				
Each module package includes standard connection kit comprised of: 3' Ethernet cable, 12" power cable, 12" power pigtail and power splitter board					

Updated on July 28, 2017

Specifications subject to change without notice.

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