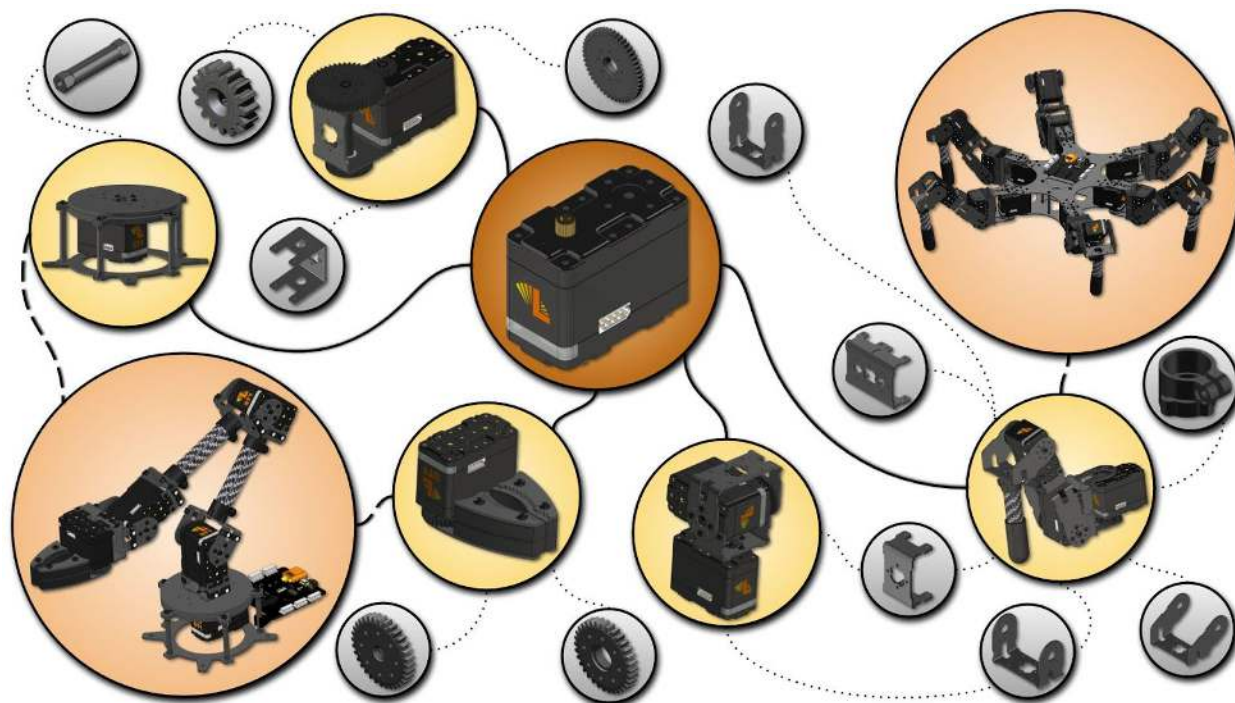# Description

- Configurable, modular smart servo motor
- Designed for the Lynxmotion Servo Erector Set (SES)
- 100RPM - no load (12V)
- 8 Kg-cm max static torque & 1.6 Kg-cm max dynamic torque (12V)
- Metal gears, RGB LED bar, sensor feedback, button interface
- Smart / wheel / RC modes
- Easy to understand LSS Communication Protocol

The Lynxmotion Smart Servos (LSS) are new compact, modular actuators which were designed to be an evolution of the standard RC servo for use in multi degree-of-freedom robots, animatronics, custom RC projects and more. The lineup currently includes three "smart servos" which differ in maximum torque and speed, and share the same dimensions, mounting points and output spline.

The servos form the core modules of the next generation Lynxmotion Servo Erector Set (S.E.S.) and a wide variety of modular brackets, mechanics and electronics have been designed around them. "Smart" means each servos' parameters are user modifiable and configurable, there is sensor feedback (Voltage, Current, Temperature, Position, and RPM), built-in safety features, and although they work best when connected to a microcontroller or computer, can be used as advanced RC actuators.
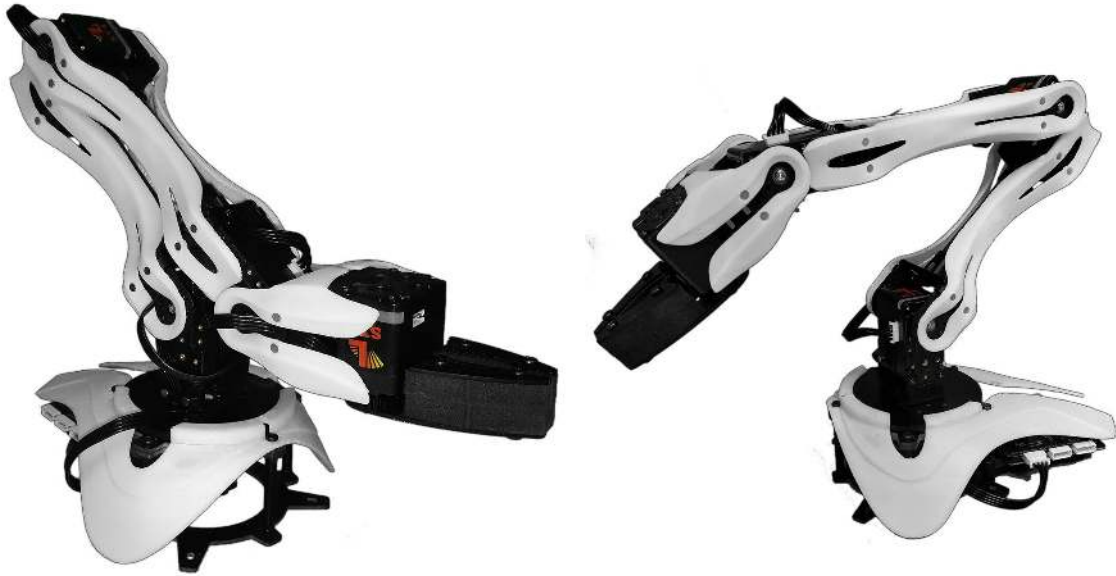
The custom LSS serial protocol was built upon the SSC-32 / 32U protocol and makes communicating with and configuring the servos one of the easiest and most intuitive to use.

Compatible Products

Note: The servo cannot be used on its own as no communication interface is included with the servo. The suggested serial interface is the LSS Adapter (USB, Arduino, Bee socket compatible), though most 5 V USB to serial adapters can be used (be sure to provide power separately). Any RC system can be used, though 6-12 V power to the LSS servo(s) should be provided separately.

Lynxmotion (LSS) - 4 DoF Robotic Arm (assembled) - Example of Smart Servos Integration

Brackets

Lynxmotion's Smart Servos are designed to be part of the Lynxmotion Servo Erector Set (SES) modular robot building system and are compatible with dozens of brackets and frame components.
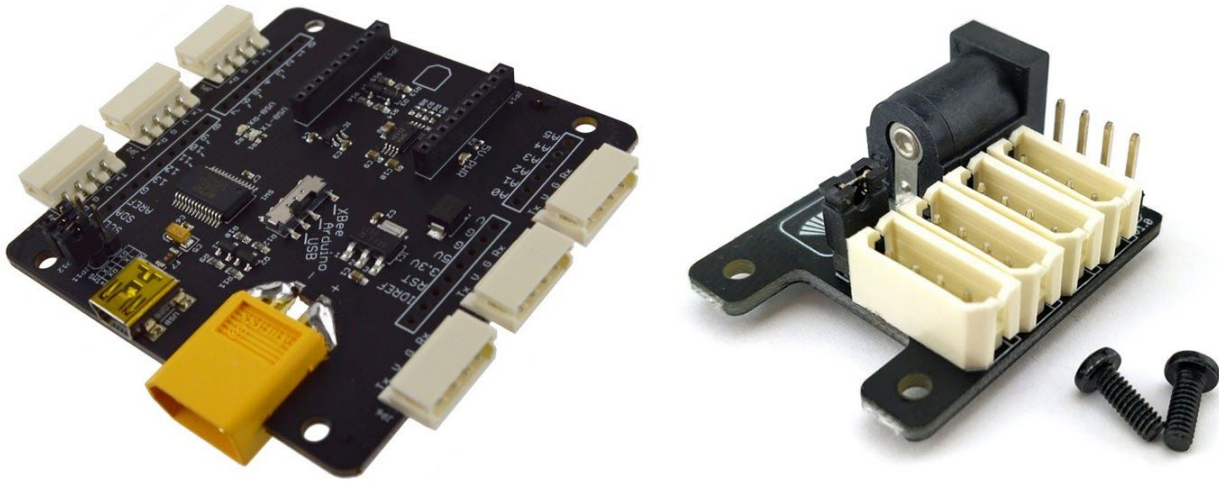

Electronics

Lynxmotion (LSS) - Adapter Board is an electronic board which allows for easy connection to and control of the Lynxmotion Smart Servos. The board includes a variety of features and functions as a central power distribution board via six LSS connectors.

The Lynxmotion Smart Servo (LSS) - Power Hub provides a simple solution to supply power to and communicate with the smart servos. It is also a useful tool to split the LSS bus from one servo to two or three while allowing these servos to be powered separately. The Power Hub can be mounted directly to the servos.

External Gears

Custom designed gears can be used to provide external gearing for the Lynxmotion Smart Servo (LSS) motors.

Assemblies

The Lynxmotion (LSS) - Geared Gripper Kit is made of durable aluminum plates and standoffs and uses foam to conform to the object being grasped. Inner teeth on the aluminum help "bite" into objects when necessary.

Software

The Lynxmotion (LSS) - Configuration Software provides easy access to viewing and modifying of the various settings that control the main features and functionality of the Lynxmotion Smart Servo Motors as well as allowing firmware updates.

Specifications

- Nominal Voltage (recommended): 12V (6V min, 12.6V max)
- Torque, max. static at 12V: 8 Kg-cm
- Torque, max dynamic at 12V: 1.6 Kg-cm
- Speed, no load at 12V: 100RPM
- Current, no load, standby at 12V: 70mA
- Current, stall at 12V: 300mA
- Operating temperature range: 45°C~67°C
- Spline: 24 Tooth (compatible with Hitec standard spline)
- DC Motor: Cored
- Gear ratio: 1:146
- Gear material: Copper
- Operating angle: 360° absolute and virtual multi-turn
- Communication type: TTL full duplex asynchronous serial or RC PWM.
- Communication protocol: Custom Lynxmotion Smart Servo (LSS)
- Baudrate range: 9600 bps ~ 921600 bps
- Baudrate (recommended) : 115200bps
- Connector: Molex 4-pin, 2.54mm Low Profile (pinout: Rx | Vcc | GND | Tx)
- Weight: 57.0g

What's Included

- Lynxmotion Smart Servo - High Speed (HS1)
- Aluminum driving horn (SES pattern) pre-assembled
- Idler horn (SES pattern) pre-assembled
- Cable: 150mm long 4-pin Molex to 4-pin Molex
- Cable: 150mm long 4-pin Molex to 3-pin 2.54mm "RC Standard" connector plus 2.54mm single pin connector

Useful Links

Website

- [Lynxmotion Website - Home](#)

Wiki

- [Lynxmotion Wiki - Home](#)

- [Lynxmotion Wiki - Lynxmotion Smart Servo (LSS)](#)
- [Lynxmotion Wiki - LSS Libraries (Arduino, Python, etc.)](#)

Dimensions

- 51mm x 25mm x 38.3mm (case only)

Multimedia

https://www.youtube.com/watch?v=pMNxJWB93ac
https://www.youtube.com/watch?v=_ZmqH72b4RU