



Zombonitron 1600

Guide to Getting Started



Modular Robotics

MOSS is designed and assembled by Modular Robotics in Boulder, CO USA from components made all over the world.

Modular Robotics 3085 Bluff Street Boulder, CO 80301

(303) 656-9407



For questions and more robots, visit:

www.modrobotics.com

1. Getting Started



Extended Battery x1



Proximity Sensor



Motor x1

- A Every MOSS robot needs a Battery Block. The Zombonitron 1600 kit includes one Extended Battery Block. Flip the power switch on and the green LED will tell you that your Extended Battery Block is charged. It'll turn red when it's getting low, but you can recharge it using the included Micro USB cable. Just plug it into your computer until the yellow charging light turns off!
- Attach a Motor Block so that one of its green power faces is connected to a green power face on the Extended Battery Block. Now the Motor Block is plugged in, but it still needs an input to tell it how to spin.
- C Attach a Proximity Sensor with one of its green faces connected to a green power face on the Extended Battery Block. Make sure that the red data-output face of the Proximity Sensor is connected to one of the Motor's brown data-input faces.
- Woo! You just created a simple MOSS robot. The Motor now responds to the Proximity Sensor. Move your hand in front of it to find the sweet spot where the Motor stops and changes direction.



2. Face Colors

Understanding the colors of MOSS faces is essential to building robots. Power and Data must flow through your construction without mixing. If they do, you won't hurt MOSS, but your robot may misbehave.



Power

Green faces route power throughout a MOSS robot. Once a block is powered by connecting a green face to a Battery Block, its other green faces will power more blocks.



Data In

Brown faces listen for data to tell that block what to do. Connect a red face on a sensor to the brown face on a motor block and it'll drive according to the sensor's output.



Data Out

Red faces broadcast data. For instance, the red face on a Proximity Sensor sends out data according to how close it is to an object.



Pass-through

Blue faces can conduct either Power or Data, but not both at once. You can use the blue faces on a Flexy Block to connect two faces that can't be arranged to touch.



Robot 347: Kapreblewrongtron

The Kapreblewrongtron is a reactive MOSS robot inspired by the Preble's Meadow Jumping Mouse, a species endemic to the area around Modular Robotics HQ in Boulder, CO. Its front-facing Proximity Sensor causes it to stay close to large animals but not too close. It's a bit of a tailgater.



Extended Battery x1

1



Brightness Sensor x1



Proximity Sensor x1





Motor ×1









Long Flexy x1





Corner x1



Motor ×1







Robot 347: Kapreblewrongtron page 2 of 3







3

Arch Brace x4

Short Brace

x1





What happens when you rotate the Motor Blocks so the brown faces switch positions?

Robot 347: Kapreblewrongtron



Robot 347: Kapreblewrongtron











MOSS

Robot 1031: Zombonitron

The Zombonitron is a kinematic MOSS robot that uses joints and hinges to create a crocodilian crawling robot. It might look a bit slithery and creepy but this revolutionary robot is just curious. The Proximity Sensor on the front will keep it from getting too close.

0



Extended Battery ×1

1



Hub ×1



Motor x2





Robot 1031: Zombonitron page 1 of 3



Long Flexy x1



Proximity Sensor x1



Brightness Sensor x1



Short Brace x1



2







Corner x2 Arch Brace x4



3



? Try swapping the Proximity and Brightness sensors. Shine a flashlight on the Brightness Sensor for best results!

Robot 1031: Zombonitron page 3 of 3



Robot 1031: **Zombonitron**













MOSS

Robot 65: Paranoid Robosaurus

The Paranoid Robosaurus is a nervous little robot which uses a feedback loop to scoot with a momentum-driven shuffle. 65 million years ago, its dino-relatives ruled the world. Now this twitchy terror is the king of the kitchen floor. It's still not a fan of anything hovering above it, especially asteroids.







Wheel x1

Corner x1



N



Motor x1



Arch Brace x1











Long Flexy x1

Brightness Sensor x1

Short Brace x1



Arch Brace x2







Robot 65: Paranoid Robosaurus













4. Available Blocks

The MOSS robot construction system is comprised of blocks that you can combine to build a multitudinous variety of robots. Use the following index of blocks to see what is available or visit www.modrobotics.com/moss to discover new MOSS robots.



Extended Battery The Extended Battery is a rechargeable LiPo battery that powers your robots.



Double Brain The Double Brain Block uses Bluetooth wireless communication to link your robot to a mobile device or computer.



Brightness Sensor The MOSS Brightness Sensor is tuned to respond to bright sources of light, like a flashlight or the sun.



Proximity Sensor

The Proximity Sensor helps your robot measure distance to the closest object using infrared light.



Knob Sensor The Knob Sensor uses a potentiometer to precisely control a data value.



Mic Sensor The Mic Sensor measures the level of noise around it.



Pivot

The Pivot provides a powered articulation to robot construction. Use it to create steering mechanisms or powered hinges.



Motor

The Motor has a rotating end that can be used to power a rolling wheel. Experiment with the orientation of your motor block and create new types of movement.



Flashlight

The Flashlight glows brightly when activated. Use it to light your path or trigger a Brightness Sensor.



Wheel

The MOSS Wheel is a support piece that can translate the rotating face of an Axle or Motor into smooth motion.



Axle

The MOSS Axle is a support piece with the unique ability to spin along one axis.



Corner The Corner is a connective block that can link and support nearby faces.



Hub

The Hub is a connective block that can link nearby faces. The humble Hub is one of the most versatile pieces of MOSS thanks to its unique ability to split, connect, or average signals to multiple blocks.



Long Flexy

The Long Flexy is a connective block that allows you to connect power or data across four standard block lengths.



Short Flexy The Short Flexy is a connective block that allows you to connect power or data across two standard block lengths.



Long Brace The Long Brace spans three standard block lengths. This block is the best choice to stengthen areas of your robot.



Short Brace The Short Brace spans two standard block lengths, providing connective support for up to six steel spheres.



Corner Brace The Corner Brace spans three standard block lengths with a 90 degree bend in the middle.

Important Information About MOSS:

General: Not for use by children under the age of 8. Do not get MOSS wet! Do not submerge, burn, puncture, crush, microwave, or expose MOSS to extreme heat or fire. Keep MOSS out of the dirt - magnetic particles will stick to the connectors and may cause damage. Do not connect the MOSS Battery Block to more than one power source. MOSS charges at 5V DC (____). Your MOSS packaging should be retained because it contains important information about the manufacturer.

Cleaning: Before cleaning, disconnect the Battery block from the USB charging cable. Use a lightly moistened (with water), soft, lint-free cloth to clean MOSS. DO NOT USE alcohol, household cleaners, ammonia, window cleaner, aerosol sprays, solvents or abrasives. Do not spray water directly on the product. Do not let moisture enter any openings.

WARNING: Not suitable for children under 8 years old. This product contains small parts with magnets. Swallowing these parts can cause the magnets to stick together across the intestines causing serious injuries or death. Seek immediate medical attention if the small parts are swallowed.

You've just begun your journey to the summit of *Mount Im'awesome'Atbuilding'robots*. To reach its wonderful peak you need only let your imagination run wild. The robots you've built in this guide are a tiny portion of the creations available to you. Let your intuition and imagination guide you and create the robot you've always wanted to build.

We hope you enjoy MOSS and can't wait to see what you build! Please share your creations with us on Facebook or Twitter using the hashtag:



Want more robot construction ideas? Visit:

www.modrobotics.com

