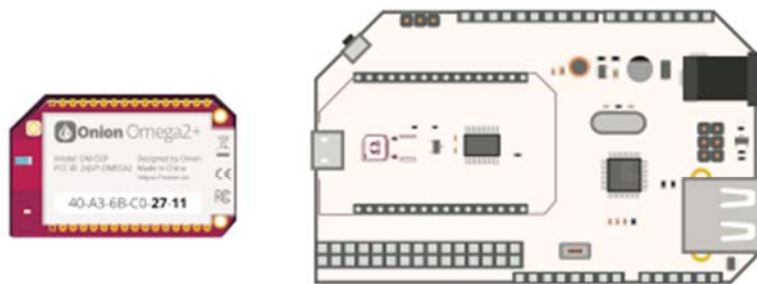




Onion Omega2 Arduino Dock Starter Kit

Welcome to the Guide for the Onion Omega2 Arduino Dock Starter Kit!

Onion Omega2 **Arduino Dock Starter Kit**



What We're Going to Learn

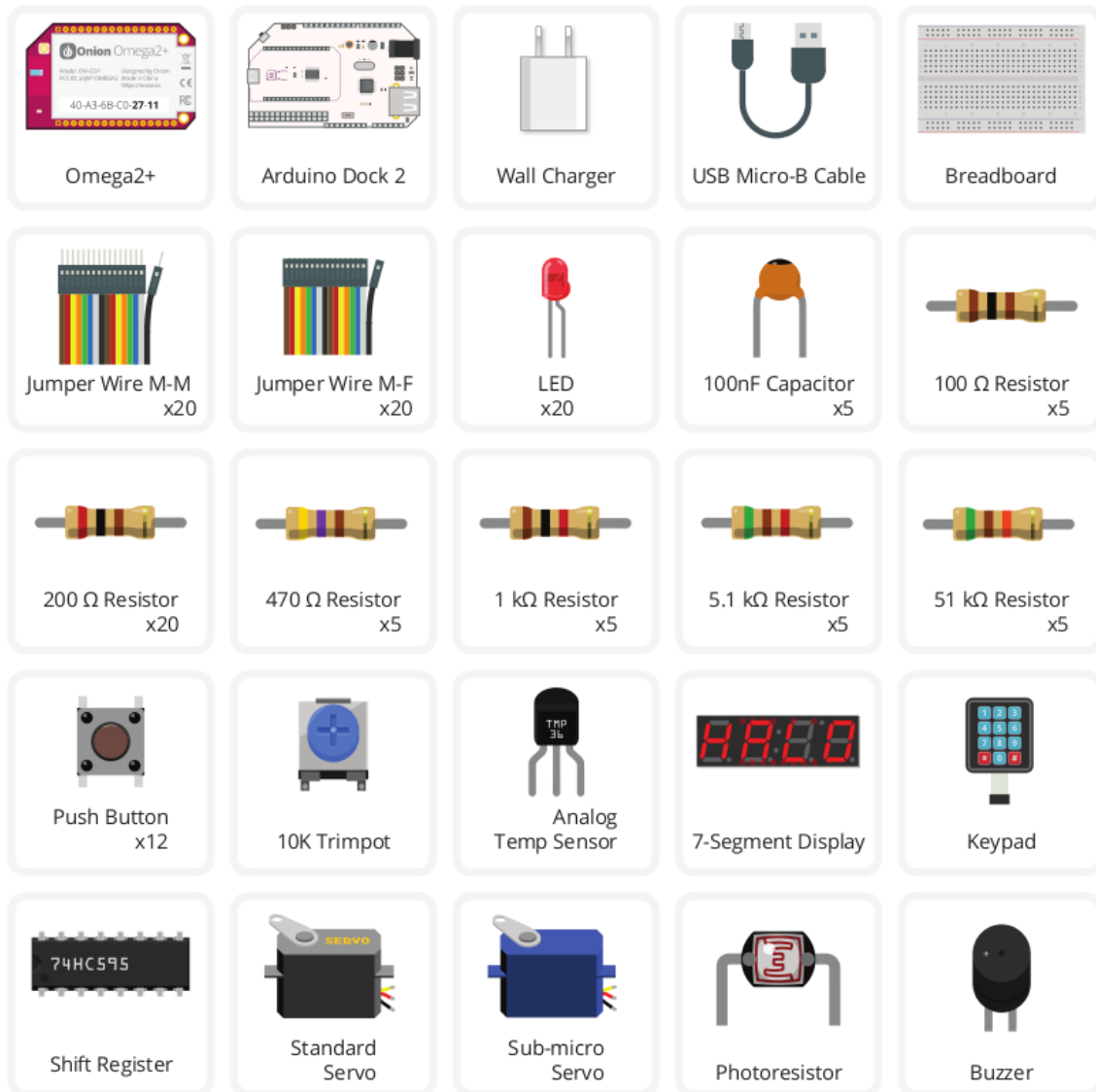
We're going to learn about the following:

- How to put together circuits on a breadboard
 - This is an essential skill for electronics prototyping!
- Get comfortable reading circuit diagrams
- Using the Omega's command line interface
- How to flash the microcontroller on the Arduino Dock using the Arduino IDE
- Use Arduino sketches to control external circuits with the Omega and Arduino Dock
 - Programming from the ground-up
 - Learning If statements, For loops, While Loops
 - Writing our own functions
 - Using existing libraries
 - Serial communication with the Omega
 - Object Oriented programming
 - Using classes
 - Writing our own classes

What's Included

Your Arduino Dock Starter Kit contains the following items; we've labelled them here for your convenience.

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How to Use This Guide

Before getting started on the experiments, set up your Omega by following the [First Time Setup Guide](#).

Then you can learn more on:

1. [Connecting to the Omega's Command Line](#)
2. [An introduction to using the command line](#)

We strongly recommend reading up on using the Arduino Dock:

1. [Setting up the Arduino IDE to wirelessly flash sketches to the Arduino Dock](#)
2. [Resetting the Arduino Dock's microcontroller](#)
3. [Communication between the Omega and Arduino Dock ATmega microcontroller](#)

Once you've done those, we recommend working your way through the experiments in order as they usually build on what we've learned in each one.

What Exactly Will I Learn?

Here's a list of all of the experiments we're going to build with your Kit:

1. [Blinking an LED](#)
 - o Learn the basics of programming the Arduino Dock by turning an LED on and off.
2. [Blinking Multiple LEDs](#)
 - o Learn some more programming concepts by controlling multiple LEDs at once.
3. [Reading a Potentiometer](#)
 - o Read an analog input value from a potentiometer (knob) and use it to control your circuit.
4. [Reading a Button](#)
 - o We'll use a push button to control LEDs and learn about interrupts along the way.
5. [Sensing Ambient Temperature](#)
 - o Use an analog temperature sensor to report ambient temperature to the Omega.
6. [Sensing Ambient Light Intensity](#)
 - o Use a photoresistor and a voltage divider circuit to report ambient light intensity to the Omega.
7. [Using a Buzzer](#)
 - o We'll make our very own doorbell code and circuit.
8. [Controlling Servos](#)
 - o Learn about object oriented programming and generating pulse width modulated signals to control servomotors
9. [Reading a Keypad](#)
 - o Use a keypad to physically password protect a part of a program
10. [Using a Shift Register](#)
 - o Learn how to use a shift register to effectively expand the number of GPIOs available to us and make a sweet effect with a bunch of LEDs
11. [Controlling a 7-Segment Display](#)
 - o Send text from the Omega and display it on a 7-segment display!