

V 1.0

One Button Studio

Setup Guide



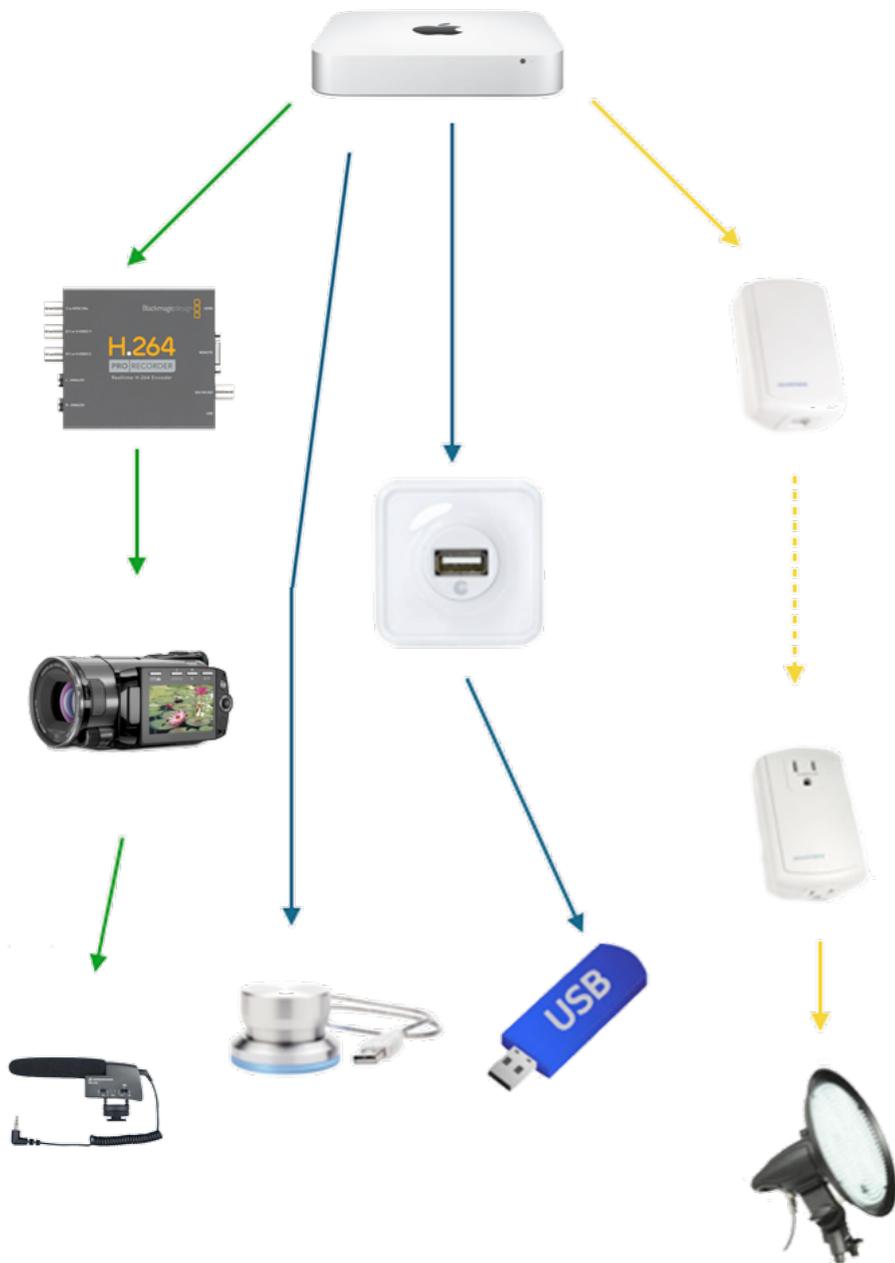
Overview

The One Button Studio (OBS) is an automated and simplified video recording studio. The technology provides a space for users to record video and presentations with virtually no learning curve.

This book is designed to help you setup your own OBS.



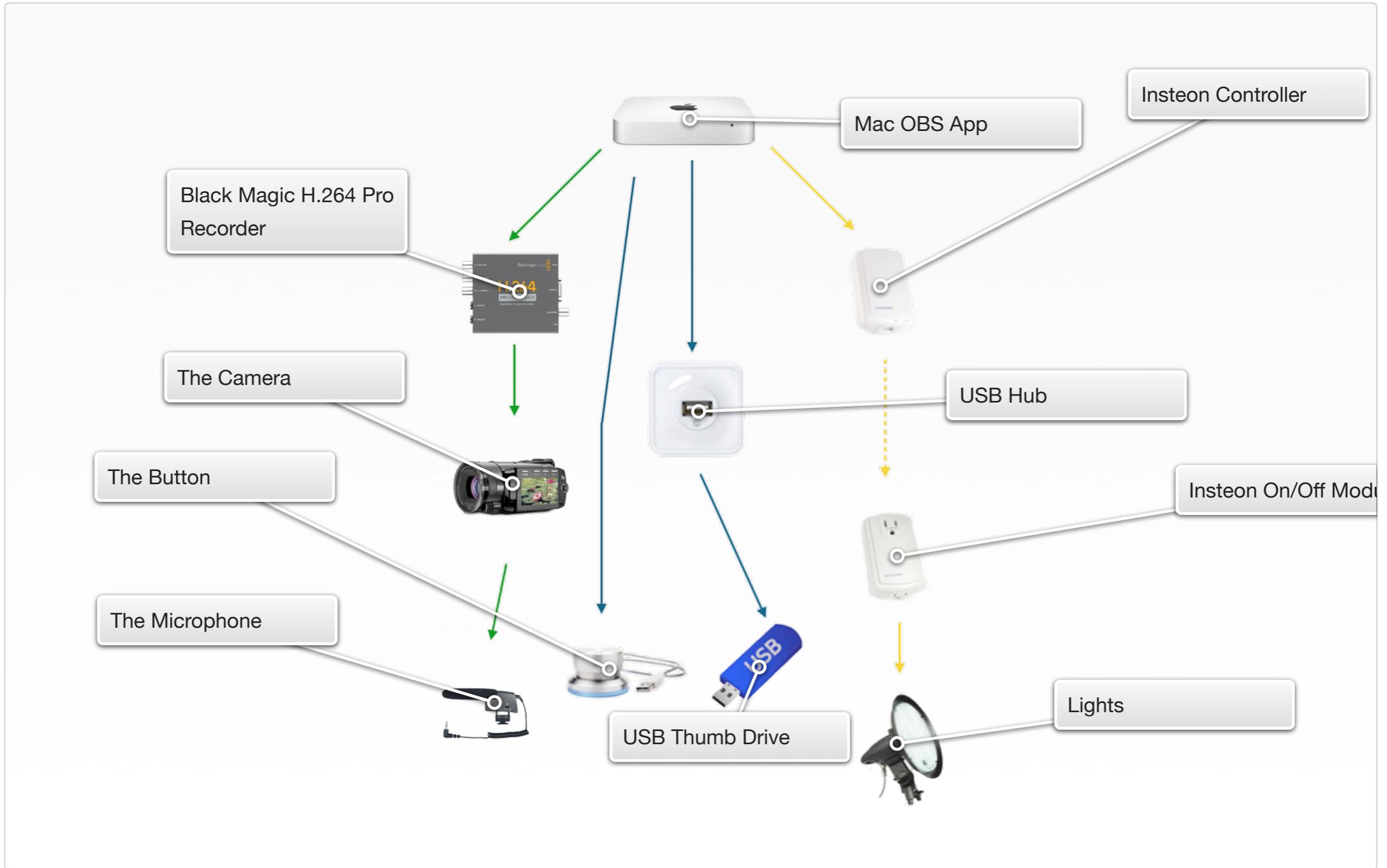
How Does it Work?



The core of the One Button Studio is the Mac OS X app found on the Mac App Store. This app automates the process of recording video and audio. To do this, the app will wait for a volume to mount, this process happens from the insertion of a thumb drive or other storage device. It will then send commands to a software package called “Indigo Server.” This is a command to turn on the lights (see setup in [Chapter 4](#)). Simultaneously the app will start receiving video and audio streams from an HDMI camera through the “Black Magic h.264 Pro Recorder” which compresses the video and audio stream into the h.264 codec.

When the user presses the “PowerMate USB Controller” (the button) the app will then start a countdown and record the video and audio stream to the hard drive of the Mac Mini. When a user presses the button a second time the app will cease recording, it will then flatten the video file into an MP4 file and copy it to the thumb drive. The user will then be informed when the copy is complete to either remove their thumb drive or to press the button again to start another recording. If the user removes their thumb drive the app will then send another command to the “Indigo software” to turn the lights off.

Interactive 1.1



Equipment & Budgets

MINIMUM ITEMS NEEDED TO RUN THE APP

1. Mac Computer and OBS App
2. Black Magic h.264 Pro Recorder
3. Video Camera with HDMI Live streaming
4. USB Thumb Drive



The One Button Studio is designed to be a complete and easy-to-use production studio, but it can be configured in many different ways. The items listed in the left column are all that are truly necessary to make the app work properly, however, if you want lights to operate automatically you will also need Indigo 5 software configured with the Insteon USB interface Modem and Insteon On/Off Modules that are connected to lights.

When we start to look at budgeting for a studio we need to determine what do we want the studio to be able to do. If you only need to record video without any lighting with just the on-board camera microphone then you will only need the equipment listed on the left column.

If you want to add lighting then you will need LED lights and the Insteon devices as well as the additional Indigo software, how many lights you need depends on the green screen technology you may or may not choose to use (lighting needs should be determined by your multimedia specialist). If the ability to record presentations is needed, then a television or projection system will be necessary. The configuration of each studio can be very different depending on the needs for that studio. For a detailed list of the currently recommended hardware visit onebutton.psu.edu/setup

Starting with a Team

ROLES

1. Project Manager (Lead)
2. Electrician
3. Multimedia Specialist (Film/videographer)
4. IT Specialist

need help?

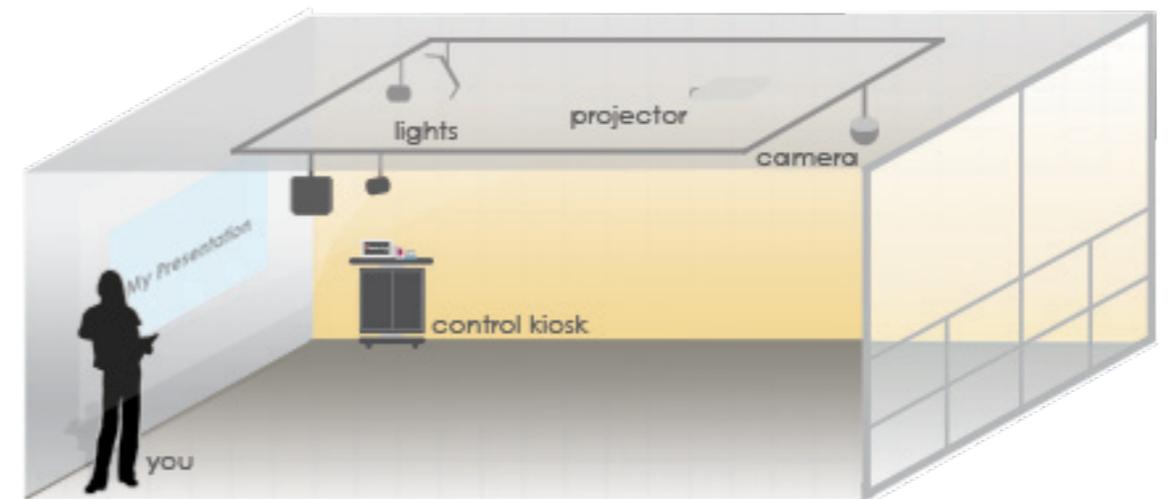


The One Button Studio is centered on simplicity, however performing the initial setup required some specific skill sets. For this reason we recommend a team similar, at least in available skill sets, as listed in the left column. Each skill set or role will be needed for very specific purposes as outlined below.

- 1) Project Manager - A project as complicated as building a video studio should have one person serving as a project manager to ensure that all members have the material and resources needed to accomplish their tasks within the allotted time.
- 2) Electrician - It is the responsibility of the electrician to ensure that the two required electrical circuits and appropriate outlets are added to the studio space and in the correct position. Additionally this person(s) may be needed to do final mounting of the lights depending on the installation requirements.
- 3) Multimedia Specialist - It this role's responsibility to setup the camera appropriately, and configure the lights location in a typical 3 point lighting setup, and if needed to properly light a green screen. When the lights are in position the electrician can record their location and mount them to the ceiling.
- 4) IT Specialist - This role is needed to properly setup, manage, and configure the Mac Mini and the app for proper usage.

The Room

This Chapter will focus entirely on how to prepare a room to be a One Button Studio, including mounting hardware and green screen selections.



Electrical Circuits

When designing a video studio in the past we would need to make sure there were enough electrical circuits so as to not trip any given circuit. This being necessary because of the heavy load caused by incandescent lighting. With the One Button Studio we still need to pay attention to the electrical circuits, but for a different reason.

With a fully featured OBS we need the room to have two electrical circuits in place, one circuit to put all of the LED lights on and another circuit for the projector and camera, in addition the computer must have access to an outlet on both circuits.

The computer equipment itself will draw power from the projector circuit but will also need to have access in close proximity to the lighting circuit so that the Insteon equipment can talk across the A/C power lines. This equipment is a variation on the X10 protocol that uses two way communication, because the communication happens over the power line we recommend keeping all of the insteon devices connected to lights on the same physical electric circuit.

In a typical OBS the lighting circuit has outlets in the ceiling located a foot or so in from each of the four corners of the room (this can vary). This allows for the maximum configuration of lighting in the room, again there should be an additional outlet on this circuit near the computer kiosk.



Lighting the Studio

THINGS TO CONSIDER

1. Ambient light
2. Color temperature
3. Green Screen Technology

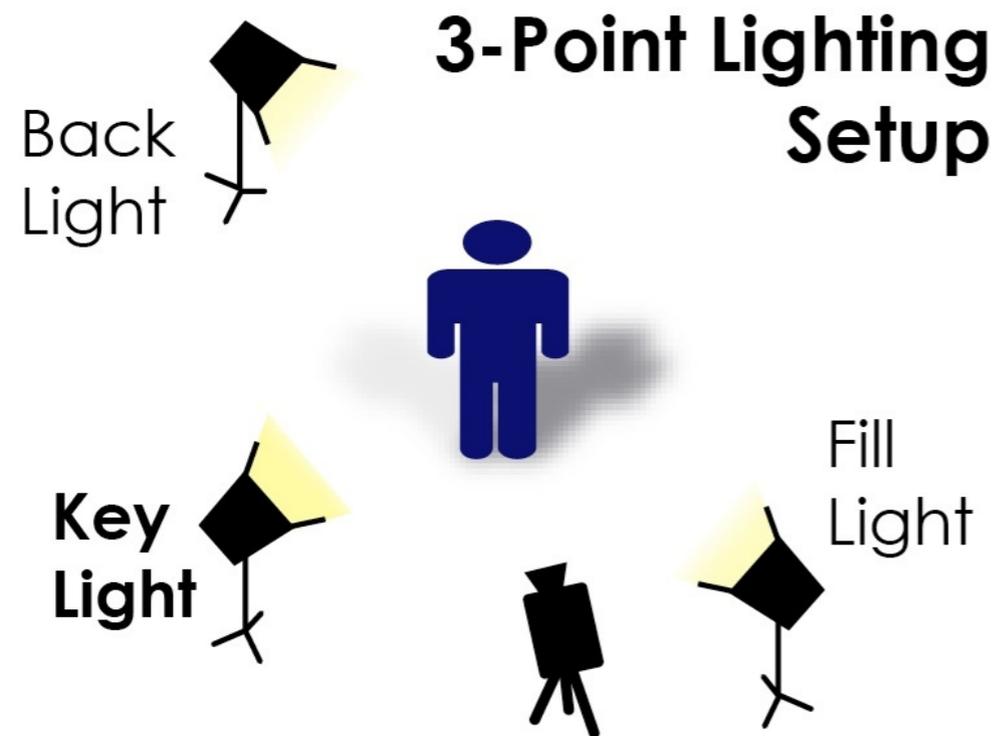


If you have expertise on lighting for film or video available to you, here is where you might use their help. Lighting can be tricky especially when you have a green screen as part of your scene. First we will want to consider what overhead lights are currently in the space. Do the overheads need to remain on to use the room?

The image on the left shows a studio with glass walls, this means that there is enough ambient light coming into the room that the overhead lights can remain off, this effects our next consideration, color temperature. Many rooms will likely have fluorescent lighting overhead, if this light can remain off then you can use almost any color temperature with your studio lights that you want. However, if these lights need to remain on for use of the room then you should be aware that typical fluorescent bulbs emit a correlated color temperature of around 5000 kelvin. This means that if you set the color temperature of your studio lights to 3200 (incandescent) then the overhead light will have a green color or cast. If you choose day light balanced or around 6500 kelvin then the overheads will cast a magenta colored light. You can use gels to match the lights and then white balance your camera so the lights work properly together.

Now a typical studio consists of a 3 point lighting setup, if a retro-reflective green screen is used then these three lights will likely be all that is needed.

However with a normal green screen you will need additional lights. In this setup the subject or person should be lit independent of the screen, and you want to achieve a perfectly even light across the entirety of the screen itself.



Green Screen Technology

THINGS TO CONSIDER

1. Cost
2. Lighting
3. Functionality

There are a lot of different options to choose from when it comes to green screen. You can use chroma key green paint on a wall, hanging chroma key fabric, a pop-up green screen. Each of these options will change how you approach the design for the rest of the room, a pop-up green screen will be the least costly but will require a manual process of putting up and down by the users. Chroma key hanging fabric will also either require an automated housing, which is costly or another manual process by the user of moving a curtain in place. Chroma Key paint will require that you use a separate screen for projection or a large monitor on a cart for presentation recordings. All of these options also require that the user stand away from the green screen, limiting the types of shots that can be done, and also additional independent lighting to make them key out well.

What we are now recommending is a retro-reflective green screen option with a light-ring. You can see this in action by a product/vendor called Reflecmedia. With this technology the neutral grey backdrop, green screen, and projection screen are all rolled into one piece of fabric. With a simple switch of a button the grey fabric will become a perfect green screen with no additional lighting needed. With a retro-reflective screen you only need to light the subject and never the screen itself. There is no longer a manual process of changing backdrops or moving screens since it is all one piece of fabric. While this technology is expensive much of it can be offset by not purchasing additional backdrops and by purchasing fewer lights. [Watch a demo of Reflecmedia a retro-reflective green screen.](#)

Projection

PRESENTATION OPTIONS

1. Large Screen Television
2. Projector

The Projection system you choose will impact both the cost and how finished videos appear.

Using a television is typically the lowest cost option and the image should also resolve fairly well on camera. The largest downside is that a television or large monitor can be bulky, the frame will be visible in the shot, and if using a retro-reflective green screen the screen will need removed to use the large television/monitor, or vice versa.

Using a projector in the space is ideal for a couple reasons: the screen size can be easily adjusted to fit the space requirements and when using a retro-reflective green screen changing backgrounds is no longer necessary. A retro-reflective backdrop can serve as green screen, neutral backdrop, and projection screen all in one, provided that the projector is located physically near the camera.

Mounting

EQUIPMENT TO MOUNT

1. Lights
2. Microphone
3. Mixer
4. Camera
5. Computer equipment
6. Projector
7. Screen

There are many ways . Currently for lighting, microphone, and mixer equipment we use scissor clips attached to the drop ceiling grid along with steel safety cables which are anchored above the drop ceiling.

We will typically use a wall or ceiling mount for the camera depending on the room. The projector should be mounted within two feet or closer to the camera if you are using a retro-reflective background for green screen/presentation screen.

The retro-reflective screen will likely have grommets and for best mounting simple hooks will keep it flat against the wall. The equipment guide located on the [One Button Studio](#) website will list the current hardware we are using for mounting.

Chapter 3

Setting up the Mac for running the App

This chapter covers the necessary steps to setting up the mac mini for running the app.



Preparing the Computer

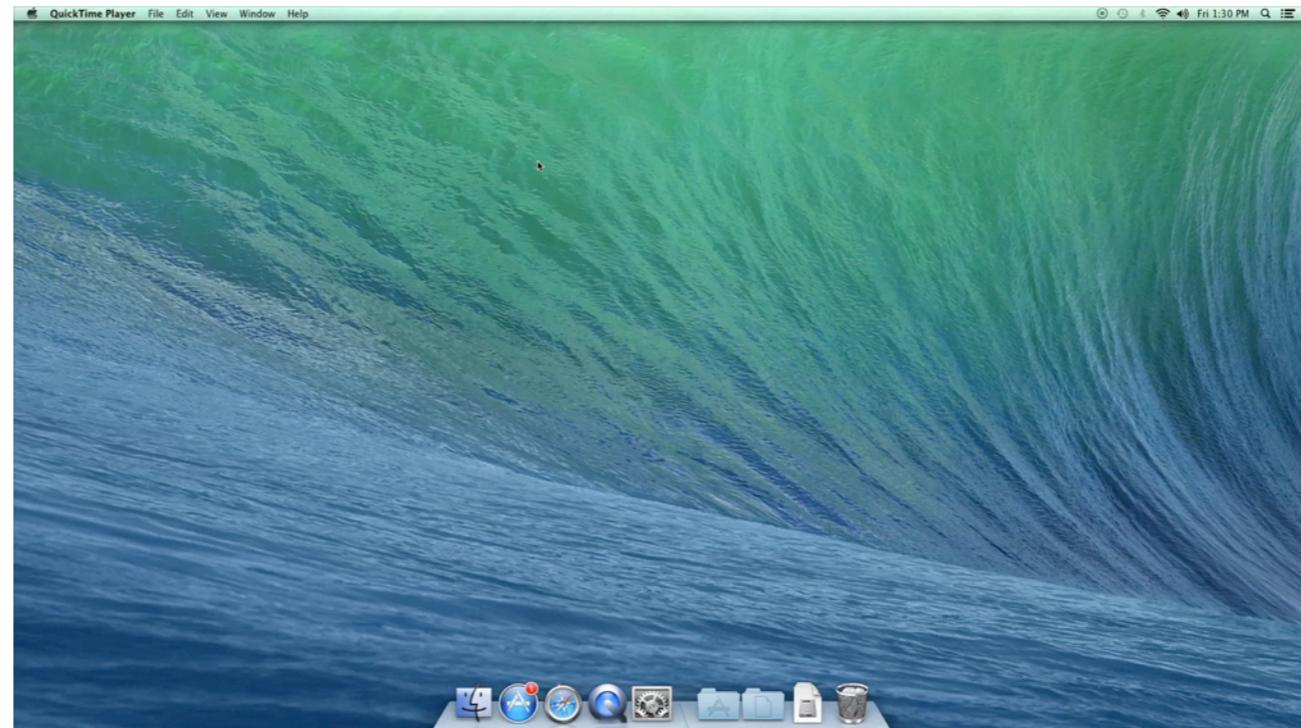
STEPS NEEDED

1. Create an admin user
2. Turn screen saver and sleep off
3. Create an energy saver reboot schedule
4. Install black magic decklink software
5. Install & configure Indigo 5
6. Install & configure Griffin Powermate software
7. Configure the startup settings
8. Run the app and link the applescript

1) To start we want to create an admin user the automatically logs into the machine, you may consider this a security risk but we do recommend you remove the keyboard from the One Button Studio computer entirely.

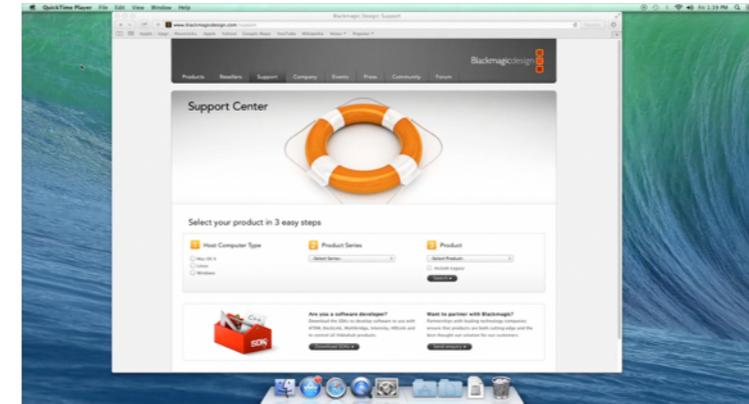
2-3) In system preferences set computer and display sleep to never, check startup automatically after power failer. Then create a schedule to reboot every day during off hours.

Step 2-3 Screencast of energy saver settings



4) Goto [The Black Magic Support website](#) then download the h.264 pro recorder's desktop video software

Step 4 Downloading the Black Magic drivers



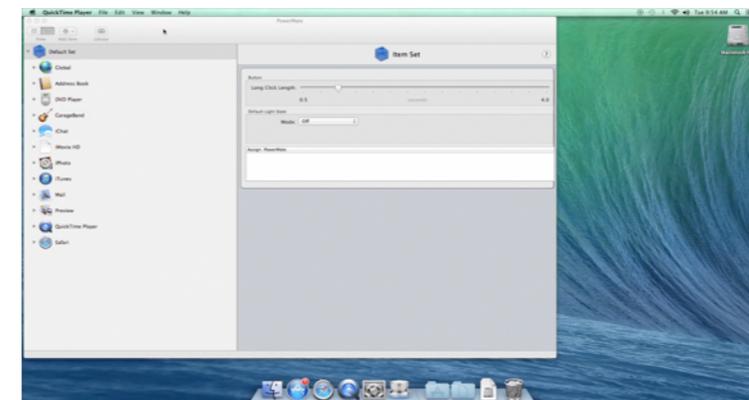
5) When you purchase Indigo 5 it will come on a cd, if you're using a new Mac Mini you won't have a cd drive. However, you can download the software from [Perceptive Automation's website](#). You will also need to download and update your [FTDI USB drivers](#) which are also found on the web. Once you have the software installed it will ask for a cd key that is found on the back of your disc sleeve.

Step 5 Configuring Indigo 5



6) Install and Configure Griffin Powermate software, the software can be found on the [Griffin Website](#).

Step 6 Configuring Powermate



7) Setup Indigo 5, Powermate, and the One Button Studio app to start upon boot of the computer.

Step 7 Launch Items



8) Last we will need to launch and test the One Button Studio app. Including telling the app where to find “Indigo Server” in the processes (you need to choose “indigo server” and not the indigo app).

Step 8 Launching the One Button Studio app



Chapter 4

Maintenance and Support

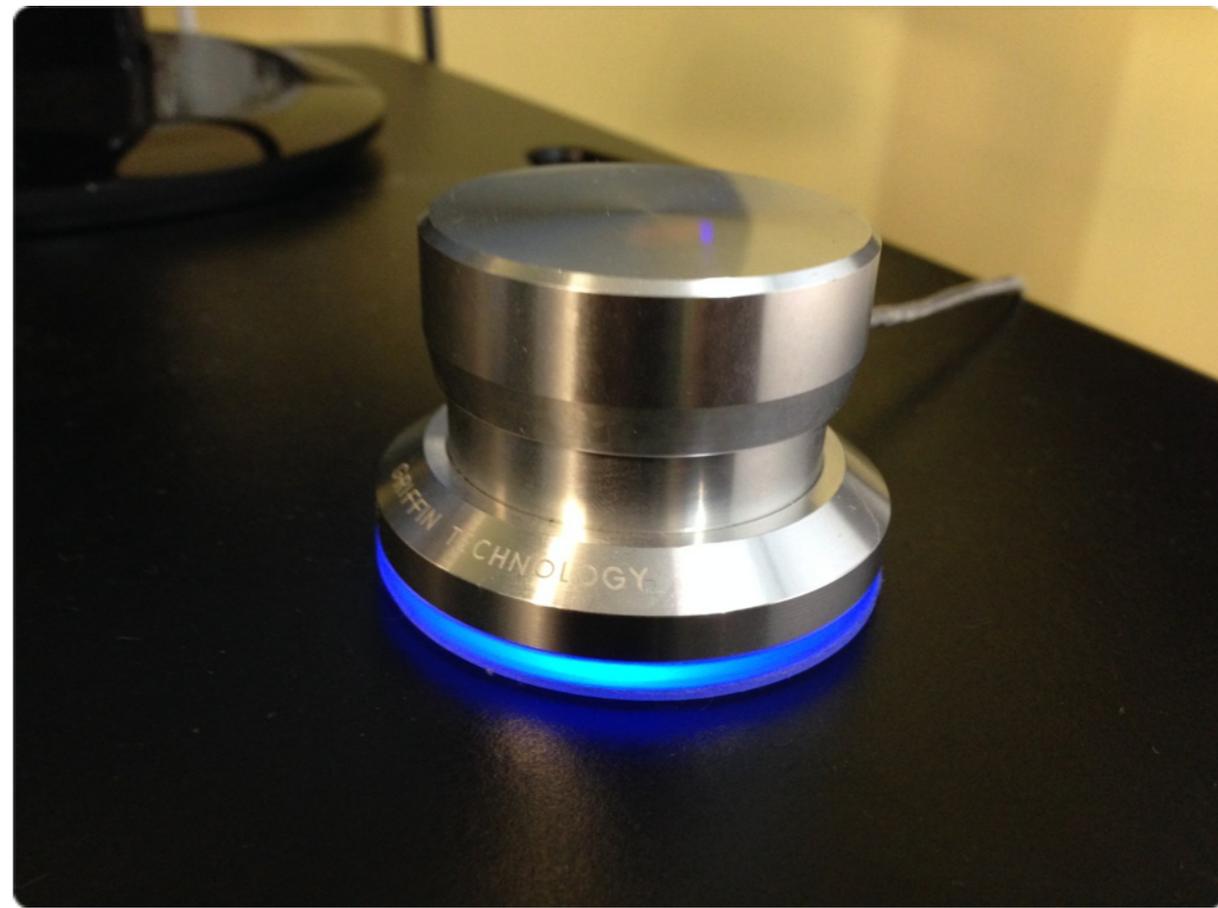
This chapter will simply list a few known maintenance issues, and some support information.



Known Issues

KNOWN ISSUES

1. Physical Pins wear out on the USB hub after hundred of video's, consider keeping extra.
2. The A/C to D/C power supplies on the lights can go bad after hundred's of video's, consider ordering extra. If the lights are discontinued when you go to order more you can typically find generic power supplies.
3. Single LED's on the lights can burn out, this shouldn't be much of a concern as it will take many to effect the light output appreciably.
4. Mac's can not read storage devices that are formatted NTFS, all thumb drives should be formatted FAT, if a device is mounted that is unwritable due to this or any other issue the app will notify the user to seek technical support.



Section 2

Support

A photograph showing a woman with long blonde hair, wearing a white short-sleeved shirt, standing at a podium and speaking to an audience. The audience is seated in a room with large windows and glass partitions. Other people are visible in the background, some looking towards the speaker.

For support on the One Button Studio consider joining the yammer community. To request access to this community please e-mail onebutton@psu.edu. Please do not submit support requests directly to the e-mail address. The yammer community is designed to thread all conversations so that others can benefit from your questions. If you know the answer to someone else's questions please answer it.

You can also post recommendations to help make this book better by posting them in the yammer network. Thank you.

Retro-reflective green screen

A specialty fabric that uses glass beads to reflect light directly back to its source. This fabric coupled with a ring of green LED lights wrapped around the lens of a camera will create a chroma key green screen.

Related Glossary Terms

Drag related terms here

Index

Find Term

Chapter 2 - Green Screen Technology