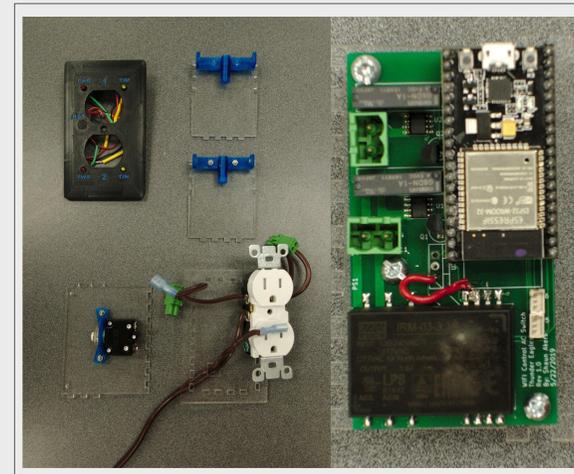
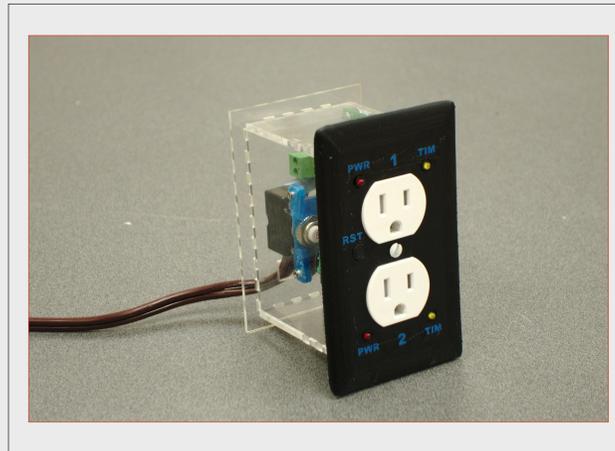


Smart WiFi Outlet

Make your outlets part of your smart home: control them with a simple tap of your phone!



UNIQUE ENGINEERING REQUIREMENTS

- Inside the UI application, system will provide plot of at least 24 hours of power consumption for each outlet, sampled at least 6 times per hour
- System will have two indicating LEDs per channel mounted on the outlet cover plate, one to indicate if outlet is powered, and one to indicate if the timer is enabled.

BASE ENGINEERING REQUIREMENTS

- The system will turn off and on at least 2 independent household lamps with up to 100W incandescent bulbs and report current watts delivered by each channel.
- 9 out of 10 users will be able to turn the switches off and on from a mobile phone in less than 10 seconds without any training or having previously seen the interface.
- The system will use only US standard plugins for connecting to external devices and will not allow any object with a diameter greater than 1mm to enter the enclosure, and will be disabled if more than 5A is drawn from the wall power.
- The system must turn off the output after a time of up to 1 hour \pm 1 minute when enabled.
- The system will be able to accept commands from a mobile phone over 20 feet away from the plugins.

HOW THE SYSTEM WORKS

The Wireless AC Switch allows you to upgrade existing wall outlets to a smart outlet, fully controllable with an app

Powered by the ESP32 microcontroller, this device utilizes state of the art wireless technology to transform your home

Main features:

- Control power to each outlet individually, using simple HTTP request from Android App
- Safety: 5A circuit breaker to protect each device
- Real time power usage monitoring, right on your phone
- Easily set a timer for each outlet
- Fits inside wall, no extra plugins sticking out of the outlets
- Indicator LEDs allow user to easily see if power and timers are ON.

DEVELOPMENT

We were excited to work on an "Internet of Things" project. We wanted to make a consumer and enterprise ready device that could compete with currently available products.

We encountered two main challenges when making the device. First, we needed to design the product to fit inside a standard outlet receptacle box. Second, we wanted to keep the cost competitive with the smart home market.

We designed the Android app so that users can control power, set timers, and monitor power consumption in real time.

Future improvements:

- Switch to chip only microcontroller that features 5 GHz WIFI module.
- Add scheduler capability to phone app
- Add Alexa/Google Assistant/Apple Home Compatibility
- Integrate Microcontroller and Power Supply into PCB

ABOUT THE TEAM



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