

# Mike Loftus Project – Detailed View (v1)

By Bill Weis

Requirements:

1. Be able to voice control his bed (Invacare bed with 1115290 pendant).
2. Be able to voice control lamp next to bed
3. Be able to voice control heating blanket
4. Be able to turn off bedroom TV by voice before going to sleep
5. Be able to fully voice control living room TV
6. Be able to make phone calls via voice

Solution – High Level:

1. Designed a microcontroller-based Voice Activated solution that provided the desired functions of Head Up, Head Down, Feet Up, Feet Down, Raise Bed, Lower Bed.
2. Installed (3) WeMo mini smart switches to give Mike voice control of his Lamp, Heating Blanket, and TV (For the bedroom, the only necessary control of the TV was to power it down at night)
3. Installed a Google Mini, Google Chromecast, and a Logitech Harmony Hub to give Mike the ability to voice control his living room TV
4. Phone calls can be made with Google Home.

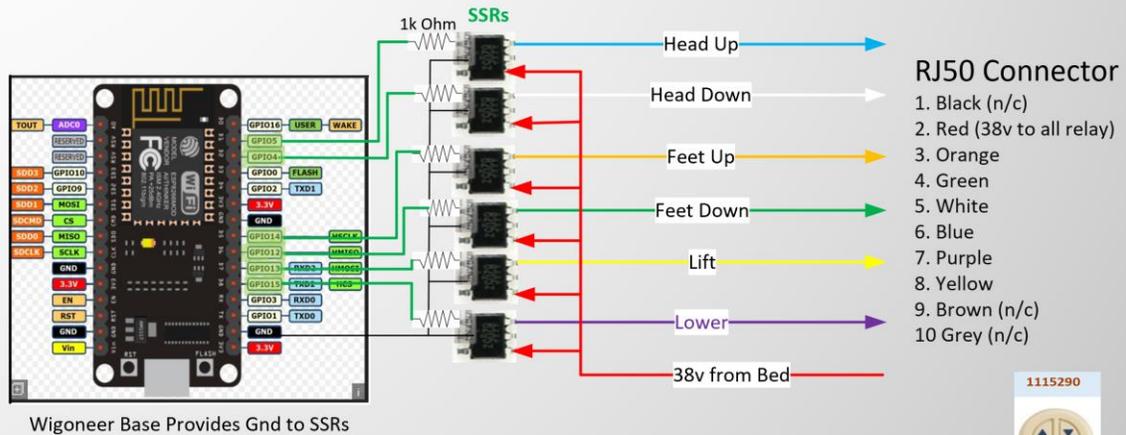
## Details of the Solution

**1 – Voice Control his bed** – The bed is an Invacare bed with a 1115290 pendant that is direct wired to the bed. The approach was to have an ESP8266 microcontroller drive 6 relays which replaced the 1115290 pendant. The 6 functions of Head Up, Head Down, Feet Up, Feet Down, Lift Bed, and Lower Bed were each controlled by one of the 6 relays. A new version of this bed controller provides a connector to allow for a hand held 1115290 to be added, therefore both voice commands as well a manual use of the pendant will control the bed.

Once the voice activated controller was connected to the bed and working, we configured some Alexa Routines that supplemented the voice commands that ship with the bed controller. We may need to play with different routines that are both easy for Mike to remember as well as for Alexa to understand.

The functional engineering drawing shows the connections between the microcontroller and the relays, as well as the relays to the bed.

Mike Loftus Project  
 Invacare Bed  
 Bill Weis 9-18-18  
 S/N 18027.07



## 2 - Voice control of his Lamp, Heating Blanket, and Bedroom TV

Mike has a lamp next to his bed he would like to turn on and off by voice. He also has a heating blanket he wants to turn on and off by voice. For both of these we installed a WeMo Smart Mini plug.

The TV in Mike's bedroom is a TLC 3092540. The main requirement relative to this TV is for Mike to be able to turn it off before he goes to sleep at night. Rather than add a Logitech Harmony Hub, we simply installed a WeMo Smart Mini plug to Mike can say "Alexa, Turn Off TV"

## 3 – Voice control of the Living Room TV

The Living Room TV is a Samsung UN32ES6500. They have a Motorola Cable box. Mike wants to watch programs on Netflix and YouTube, as well as a host of cable channels.

The easiest solution for providing Mike with voice command of Netflix and YouTube was to install a Google Chromecast Ultra which is installed on HDMI 2. The only trick related to this is when Mike wants to watch a program on the Cable box, he would need to say "Hey Google, Turn on TV" which would result in the disconnecting from AnyDevice.

Regarding watching programs on cable, we set up all his favorite channels and established Routines to make it simpler for Mike to bring up his TV channels. We installed a Logitech Harmony Hub to give Mike control of volume, channel changing, muting, as well as turning the TV and on off.

Here is a list of the routines and cable channels we configured.

| Living Room TV         |   |
|------------------------|---|
| Cable channel          | Google Command  |
| 189                    | Hey Google, Turn on Decades   |
| 190                    | Hey Google, Turn on ME TV   |
| 196                    | Hey Google, Turn on Wisconsin   |
| 197                    | Hey Google, Turn on Create  |
| 600                    | Hey Google, Turn on PBS   |
| 603                    | Hey Google, Turn on CBS   |
| 607                    | Hey Google, Turn on ABC   |
| 615                    | Hey Google, Turn on NBC   |
| 617                    | Hey Google, Turn on FOX   |
| 621                    | Hey Google, Turn on History   |
| 622                    | Hey Google, Turn on Discovery   |
| 627                    | Hey Google, Turn on National Geographic   |
| 628                    | Hey Google, Turn on USA Network   |
| 629                    | Hey Google, Turn on HGTV  |
| 630                    | Hey Google, Turn on Food Network  |
| 633                    | Hey Google, Turn on Comedy Central  |
| 636                    | Hey Google, Turn on Hallmark  |
| 637                    | Hey Google, Turn on AMC   |
| 639                    | Hey Google, Turn on Oxygen  |
| 644                    | Hey Google, Turn on Travel Channel  |
| 648                    | Hey Google, Turn on FX  |
| 664                    | Hey Google, Turn on Big Ten   |
| 665                    | Hey Google, Turn on Golf  |
| 725                    | Hey Google, Turn on Oprah   |
| 732                    | Hey Google, Turn on CNN   |
| 734                    | Hey Google, Turn on CNBC  |
| 736                    | Hey Google, Turn on MSNBC   |
| General TV Commands    | Hey Google, Mute TV   |
| General TV Commands    | Hey Google, Unmute TV   |
| General TV Commands    | Hey Google, Channel Up  |
| General TV Commands    | Hey Google, Channel Down  |
| General TV Commands    | Hey Google, Turn Volume Up  |
| General TV Commands    | Hey Google, Turn Volume Down  |
| General TV Commands    | Hey Google, Turn TV On  |
| General TV Commands    | Hey Google, Turn TV Off   |
| Chromecast Commands*   | Hey Google, watch "NCIS" on Netflix   |
| Chromecast Commands*** | Hey Google, watch "etching" on Livingroom TV                                    |
|                        | * To switch from Netflix or Youtube back to Cable, say "Hey Google, Turn on TV" |
|                        | *** Replace etchings with any topic you want to watch on Youtube                |

#### 4 - Phone calling via Google Home

Mike wants to be able to place phone calls by voice and for the phone calls to show his phone number on caller ID on the receiving end. Google Home can place phone calls and we added the necessary contacts to the gmail contact list.

By default, the caller ID would show **private** when Mike placed a phone call from the Google home. We found a setting that allows for Mike to have his phone number show up when he places calls via Google Home.

We confirmed with Google that they do not support receiving phone calls over the Google Home Mini. With some restrictions, it is possible to receive calls via the Amazon Echo provided the caller has the Amazon app on their phone. There is also the possibility of enabling "Drop-In" so someone else with an Amazon Echo can connect with Mike without the need for Mike to "answer". We will be exploring these possibilities.

## **Resources**

[Amazon Echo](#)

[Alexa Support](#) (Contact Support via the Amazon Alexa app - can have them call your number)

[Google Home getting started](#)

[Google Home Help Forum](#)

[Google Home Support](#) Phone number for Google Home hardware support = 855-971-9121 (24/7 days a week)

[Logitech Harmony Knowledge Base](#)

[Logitech Harmony Support](#) Phone # for Support = 866-601-5644 (M-F 8am to 6pm PST)

[Lifx](#)

[Wemo Support](#) Phone number for Support = 1-844-745-wemo (9366)