Kurt Larsen Project – Detailed view (v3)
By Bill Weis

Requirements:
1. Be able to voice control his Leggett and Platt Prodigy 2.0 bed

Solution – High Level:
1. Designed a voice activated bed controller which will give Kurt voice control over four functions that are important to him.
   a. Raising the Head of the Bed
   b. Going to Zero Gravity Position (A preset that raises the feet to the same level as the heart.)
   c. Returning the bed to the Flat position
   d. Sitting up in bed to the TV position

Details of the Solution

1 – Voice Control his bed – Kurt has a Leggett and Platt Prodigy 2.0 bed that is controlled by a OKIN RF339 wireless remote that operates at 2.4ghz. This was a very challenging project given the complexity of 2.4ghz and not having access to the bed which is 2000 miles away. Fortunately, we had the help of an old friend and prior work colleague from Microsoft (Rick Varvel) who lives in the area and Rick was willing to lend his onsite technical expertise.

In our lab, we were able to determine the Address the RF339 remote transmits as well as the channel frequency, all using a HackRF device. Furthermore, we were able to determine the ID for each of the buttons on the remote. What we could not anticipate in our lab was the fact the address and/or frequency changes that would take place when the remote was paired with the bed. After a few futile attempts, we had to revert to plan B. In plan B, we took the same approach as Robbie Ivey's original prototype bed controller which uses relays to close contacts within the actual remote. (Except in this case we replaced the mechanical relay approach used in the prototype bed controller with solid state relays). We also had a friend (Bob Paradiso) solder the wires to the remote PCB. His approach to tacking thin wires in tight places is advanced beyond my skills and we were able to easily adapt the wiring Bob provided with solid state relay board we built. To hold the remote securely in place, we built a cradle out of wood and attached that assembly inside the bed controller box. The drawing on the following page shows the voice activated bed controller, solid state relays and the remote.

Kurt Project
OKIN RF339 Remote
Leggett and Platt Prodigy 2.0
S/N 18013.06

1k Ohm

Head UP

FLAT

ZGRAV

TV
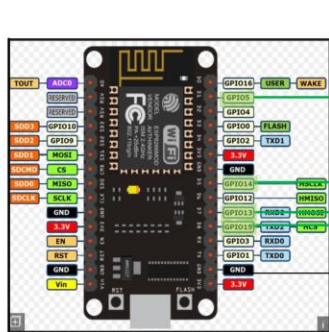
SSRs

Wigoneer Base Provides Gnd to SSRs
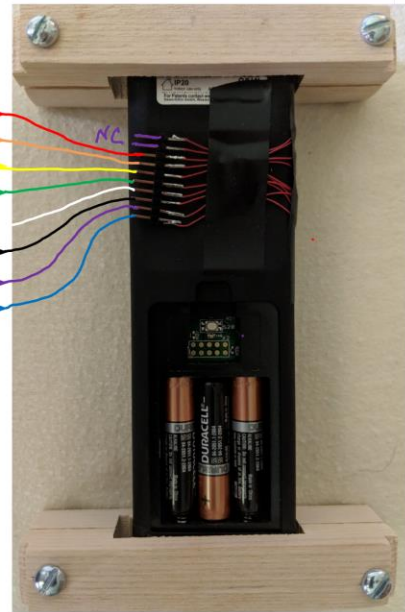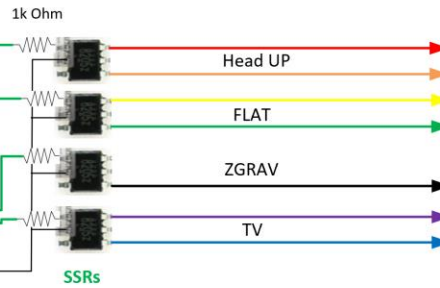
Remote – Connector male pins

Not Connected – Flashlight <pin1, 2>
GPIO5 - D1 (Remote) = Head Up <pin3> **Red** <pin4> **Orange**
GPIO14 – D5 (Remote) = FLAT <pin5> **Yellow** <pin6> **Green**
GPIO13 – D7 (Remote) = ZGRAV <pin 7> **White** <pin8> **Black**
GPIO15 – D8 (Remote) = TV <pin9> **Purple** <pin10> **Blue**

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)