

# Wyatt Keeley Project – Detailed view (v1)

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## Review of the Requirements for this project and the high-level design of the solution

Requirements:

1. Be able to voice control his bed (Invacare Semi-Electric)
2. Use voice to control his TV, Netflix, YouTube, adjust volume and turn TV on and off
3. Be able to intercom between the living room and Wyatt's room

Solution – High Level:

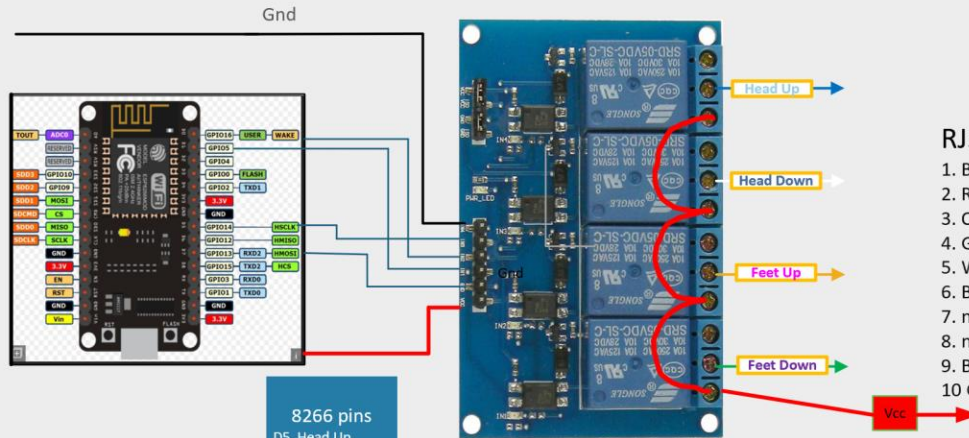
1. Installed an Amazon Echo and a custom developed bed controller to allow Wyatt to control his Invacare semi-electric bed using voice commands from both Google and Alexa.
2. We provided an Amazon Fire TV cube so Wyatt could use voice to control his TV.
3. Added a second Amazon Echo dot so they could use the drop-in feature

## Details of the Solution

**1 – Voice Control his bed** – The Invacare bed has a 1115288 pendant that is direct wired to the bed. The approach was to have an ESP8266 microcontroller drive 4 relays which replaces the original 1115288 pendant. The 4 functions of Head Up, Head Down, Feet Up, and Feet Down, are each controlled by one of the 4 relays. We also provide an RJ50 connector to allow for a hand held 1115288 to be added, therefore both voice commands as well a manual use of the pendant will control the bed. This way the caregiver can still manually control the bed when there is a disruption of the voice service whether it be internet is down, Wifi router is down, or bed controller is down.

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. For redundancy, we also provided a Google home mini which also controls the bed.

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



8266 pins  
D5 Head Up  
D0 Head Down  
D1 Leg Up  
D7 Leg Down

**Wires From Relays to Bed (RJ50)**  
Blue -> S1 -> Head Up  
White -> S2 -> Head Down  
Orange -> S3 -> Feet Up  
Green -> S4 -> Feet Down  
Red -> VDD Tied to all Red wires on the relay

An RJ50 Female connector is provided in the cover of the bed controller for the 1115288 (4) function pendant can be plugged in for manual use when the voice control is not possible

- RJ50 Connector**
1. Black (n/c)
  2. Red (38v to all relay)
  3. Orange
  4. Green
  5. White
  6. Blue
  7. n/c
  8. n/c
  9. Brown (n/c)
  10. Grey (n/c)

**2 – Control TV using Amazon Fire TV Cube** - Wyatt would like to use voice to control his TV. He wants to watch Netflix, YouTube and local over-the-air TV channels as well as control volume and have the ability to turn off the TV before going to sleep. We provided an Amazon Fire TV cube to help Wyatt meet all these requirements.

**3 – Establish an intercom using the Drop-In feature** – We installed a second amazon echo dot and placed one in the living room so Wyatt can drop in on the Amazon Echo dot in the living room when needed.

## **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)