Diane W. Project – Detailed view (v1)

By Bill Weis

Requirements:

1. Be able to control her Full Electric Medline bed using voice commands
2. Need the ability to contact caregiver using a push button transmitter
3. Be able to give voice commands when the voice is weak

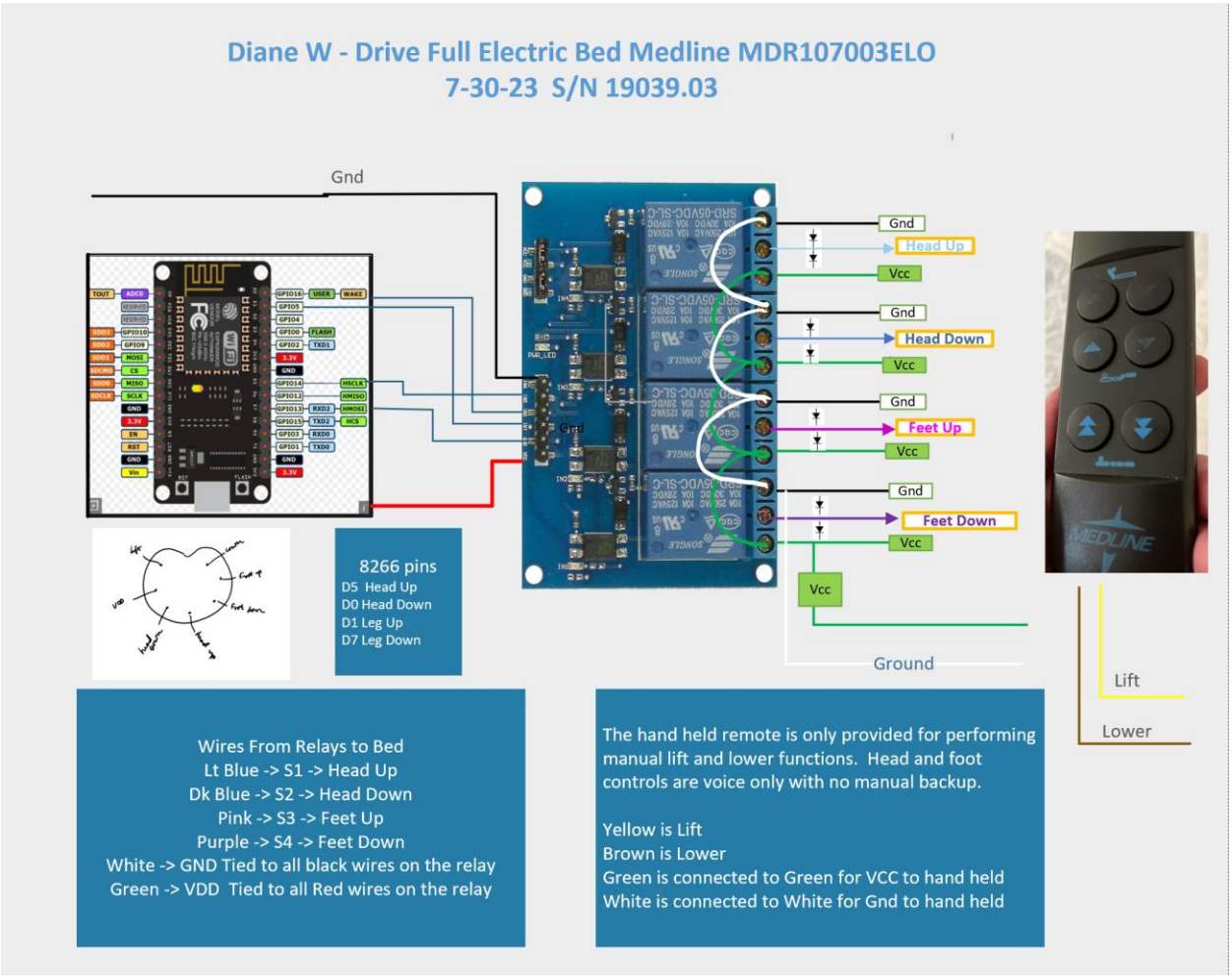
Solution – High Level:

1. Designed a voice activated bed controller which gave Diane the ability to control all desired functions of her adjustable bed using eye gaze control.
2. We provided a commercially available solution where Diane could contact a caregiver using a push button transmitter.
3. We provided a Google Pixel 3A phone that can act as a device to give bed controller commands via the Google Assistant.

Details of the Solution

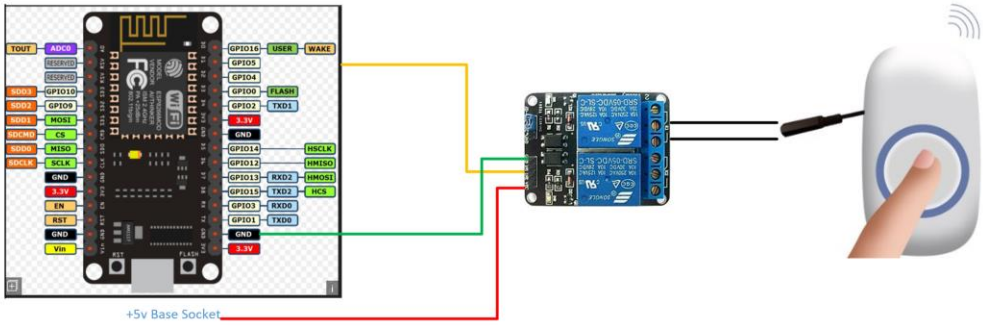
1 – Voice Control his bed – Diane has a Full Electric Medline bed with a hard wired remote. She wanted the four functions of Head Up, Head Down, Foot Up and Foot Down to be voice activated. Unfortunately, due to the way the bed controls are wired, it is not possible to provide an alternative way of controlling the bed aside from having the caregiver unplug our bed controller and replacing it with the original handheld pendant. The Hi Lo function of that bed will not be performed by voice for safety reasons, but will be possible via a handheld pendant attached to our controller. The only buttons that are functional on that remote are the Hi Lo buttons.

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.



2 – Contact caregiver using push button – Diane has ALS and needed a way to contact his caregiver when needed. We provided an off-the-shelf solution from Adaptive Tech Solutions. The push button switch that comes with the Attendant Call solution has a 1/8” plug that can be used for external control of the push button. Should her manual dexterity change in the future, we will be able to provide alternate methods of activating the push button with external controls. Their solution comes with a wall mount noise maker and a pager-like device that you can carry as you move around the house or nearby outside. These wireless receivers work with 433Mhz signals so the distance when outside is limited to the area close to the house.

Diane W. - Commercially available Attandant Call



www.AdaptiveTechSolutions.com – Wireless Attendant Call Button part WDBA-FX-M-PLUG. (Remove Switch Adaptation = No You want the external 1/8" plug wired connection to connect to the relay for future controls if needed. This future solution could also be achieved using an Amazon Smart Plug and a small relay box where the relay was configured to close n/o contacts on power up. Furthermore if a IR capable Tobii or Grid device will be used, we can provide a IR controlled relay to activate the push button

3 – Use a Google Pixel 3a XL phone as a Google Smart speaker – We provided Diane with a Google Pixel phone so she could issue voice commands via the Google Assistant on her phone should her voice volume weaken resulting from her ALS disease.