

Requirements

1. The system shall work with at minimum the 2008 Nissan Altima OBD-II protocol, ISO15765-4 (CAN-BUS.)
 - a. Other vehicles that use the same protocol may work with the system, however it is not required.
2. The system shall be able to read and clear diagnostic (trouble) codes.
 - a. The user interface will display the diagnostic codes in list form with buttons to scroll up and down through the list.
 - i. The list will display the diagnostic codes (e.g. P0011) only.
 - ii. The user must touch one of the diagnostic codes to read the description or possible cause.
 - b. The user interface will provide a button to clear all diagnostic codes simultaneously.
3. The system shall be able to read sensor data in real-time including speed, coolant temperature, and oil pressure.
 - a. The user interface will display the data in decimal format.
 - i. The option for digital gauges will be implemented if time permits.
 - b. The data will be displayed in units of miles per hour, Fahrenheit, and pounds per square inch.
4. The system shall use Bluetooth 4.0 or greater for data transfer.
 - a. The Bluetooth version shall be 4.0 or greater because previous versions do not support Bluetooth Low Energy (BLE.) The range of the connection is also improved with newer versions.
5. The Bluetooth transceiver circuit that interfaces with the OBD-II port shall be powered by the OBD-II port.
 - a. The power supplied by the port must run through a fuse.
6. The handheld unit shall use a resistive touchscreen to display information and receive user input.

- a. The screen shall be resistive instead of capacitive because resistive touch is lower cost and can be used with gloves.
7. The user interface shall not require multi-touch or swiping.
 - a. Operation with single presses simplifies the user interface and is more accessible to those with disabilities.
8. The touchscreen of the handheld unit shall be 3.5" or greater diagonally.
9. The touchscreen of the handheld unit shall operate at a resolution of at least 320 x 480 pixels.
10. The handheld unit shall use a rechargeable lithium-ion battery.
 - a. The battery shall be li-ion over li-poly because li-ion is lower cost and commonly used in portable embedded systems.
 - b. The rechargeable battery must include protection and charging circuitry.
11. The rechargeable battery shall be recharged via a Micro-USB port.
 - a. The port shall be Micro-USB instead of another version, such as USB-C, because Micro-USB components are widely available at a lower cost.
12. The rechargeable battery shall power for the handheld unit at full load for at least 2 hours.
13. The charge level of the rechargeable battery shall be displayed on the user interface.
14. The brightness level of the touchscreen shall be adjustable in the user interface.
15. The housing of the handheld unit shall include a magnet in the back.
 - a. The magnet will allow users to easily mount the device on the various magnetic dash mounts available (or any other magnetic surface.)
16. The handheld unit shall include a physical ON/OFF power switch.