

PORTLAND STATE UNIVERSITY
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING



ECE 411 - INDUSTRY DESIGN PROCESS

PROFESSOR ANDREW GREENBERG, MS
PROFESSOR OF ELECTRICAL & COMPUTER ENGINEERING

Design Review Notes

Group #16:

KIMBALL S. DAVIS, JASON HOULIHAN, & NATHAN LUTTERMAN

November 7, 2018

Schematic and Board Layout Design Review Notes

Team Being Reviewed: Group 16: Kimball Davis, Jason Houlihan, Nathan Lutterman

Reviewer: Douglas Hall, Ph.D

NOTE: Although Professor Geenberg never directly reviewed our design, we discovered some flaws in our design while watching the reviews done in class. We included these in our review notes because we changed our design based on these observations before Dr. Hall reviewed the design.

Schematic

Critical

- Missing bypass capacitors on +5V inputs to AT89S52. Added 100 nF bypass capacitors to design.
- Don't put anything on the NET layer that is not a net. We had some section labeling on the NET layer. The text was moved to the NOTES layer.

Major

- Not clear exactly what the power is coming from. Changed power supply labeling in schematic.
- Make sure there are adequate test points. Added test points for I2C signals for display.
- Not clear how much current the loads require to operate, or what the loads are. Labeled the loads on the schematic with part number, voltage, and current specifications.

Minor

- For LEDS use 500 to 1K resistors to keep them dimmer. Changed resistors in LED circuits from 330 to 1k Ω
- When presenting a schematic for review be aware of the scale. If our schematic were projected on a screen or on a laptop with zoom capabilities it would be fine. Presented on 11x7 paper a lot of the text is hard to read.

Layout

Critical

- None

Major

- Will the voltage regulator need additional heat sinks based on the power the loads will draw?

Minor

- Consider printing top and bottom layers separately, or on transparencies that can overlap so it is easier for the reviewer to follow traces.
- Not clear what type of mounting hardware will be needed for connectors.

Bill of Materials

- Power supply, fan, and light-bulb specifications are not clearly defined.