

I.F.F. (Identification Friend or Foe) System

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1 Introduction

Briefly review and update the material from your proposal, presentation, and individual reports. Describe the function, and show the block diagram (which will most likely be your Figure 1 or Figure 1.1), being sure to cite the figure directly in the text (see Section 5.2). Describe briefly the blocks into which the project has been divided. Give the performance requirements as they appear in the final version of your proposal. Describe any blocklevel changes made to the design during the semester. Show that you understand the key factors in the performance of your project. Be quantitative if possible. If in doubt, seek advice.

1.1 System Block Diagram

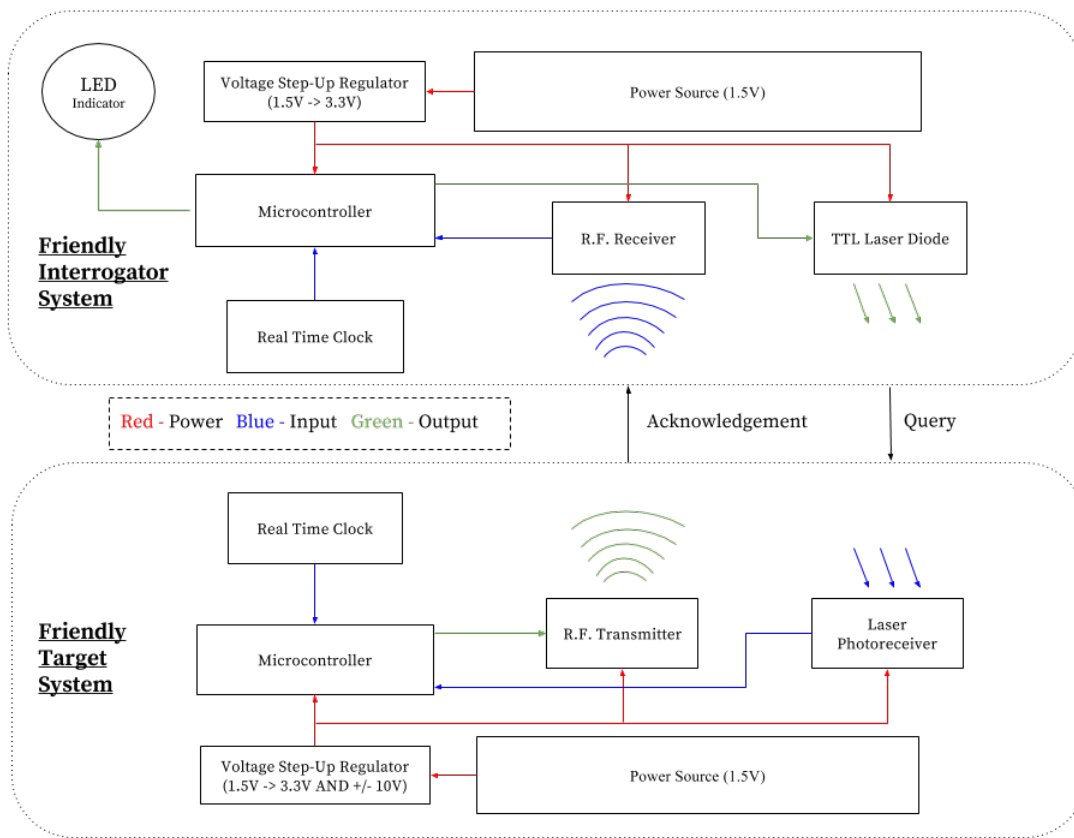


Figure 1: System Block Diagram

1.2 System Level Requirements

2 Design

2.0.1 Design Procedure

Discuss your design decisions for each block at the most general level: What alternative approaches to the design are possible, which was chosen, and why is it desirable? Introduce the major design equations or other design tools used; show the general form of the circuits and describe their functions.

2.0.2 Design Details

Present the detailed design, with diagrams and component values. Show how the design equations were applied. Give equations and diagrams with specific design values and data. Place large data tables in an appendix. Circuit diagrams that are too large to be readable on a single page should be broken into pieces for presentation. The full diagram may be included in an appendix. Use photographs only as necessary and treat them, along with all other graphics except tables, as figures.

3 Verification

Discuss the Requirement and Verification Table from your design review. Including the table in an appendix will help avoid lengthy and tedious narrative description in the main text, which may not be of immediate interest to your imagined audience of managers. Do not discuss lowlevel requirements unless they failed to verify, or you found that they were critical in some unexpected way, or you need to make changes for instance, to the tolerances or acceptable ranges of quantitative results. It is important to hit the main points and explain any requirement that is not verified, but keep the discussion concise and refer interested readers to the appendix for details. Note that the design procedure, design details, and design verification can be organized in different ways. The Word template provided by the ECE 445 staff puts the first two in one chapter and the second in another; however, a separate chapter for each is also common, with chapter sections reiterating the main project components. If you do the latter, avoid unnecessary repetition of component descriptions. Another option, though rarely used, is to organize the report according to components or blocks, with each chapter describing the design procedure, details, and verification for a single component or block.

4 Costs

Labor cost estimates should use the following formula for each partner: $\text{ideal salary (hourly rate)} \times \text{actual hours spent}$. 2.5 include estimates for electronics and machine shop hours, as applicable. For parts, use real values when you know them; make realistic estimates otherwise. List both the retail cost and what you or the department paid (in this case you may list lab-owned pieces as free). If the project might be commercially viable, estimate the cost of mass production by listing bulk purchase costs. Make sure any tables are numbered appropriately, given titles, and cited directly in the text.

5 Conclusion

Bring together, concisely, the conclusions to be drawn. It may be appropriate, depending on the nature of the project, to begin or end with a two or three sentence executive summary. The reader needs to be convinced that the design will work. Summarize your accomplishments. If uncertainties remain, they should be pointed out, and alternatives, such as modifying performance specifications, should be spelled

out to deal with foreseeable outcomes. Use words, not equations or diagrams. Devote a section to ethical considerations with reference to the IEEE Code of Ethics and any other applicable code (e.g., the AMA Code of Medical Ethics for certain bioengineering projects).

6 References

Follow the IEEE reference styles provided in this document for various kinds of sources. If you need to cite something for which there is no example, simply use common sense and provide in a neat and orderly manner emulating the IEEE reference style the information necessary for another researcher to find that source. References [1][3] are examples of a manual, datasheet, and web page, respectively. References [4][7] are more standard, scholarly sources: a book, chapter in an edited book, journal article, and conference proceedings. Reference [8] is a technical report, and reference [9] is class notes. Cite all references consecutively in the text, as is done here. (ECE Editorial Services provides a more detailed description of IEEE reference style on its wiki: <http://go.illinois.edu/ecethesis> .)

References

Appendix