Inverters and Charge Controllers

- as used in solar appliances -

Project Report
B320b

Aalborg University
Electronics and Computer Engineering

Here you can write something about which tools and software you have used for typesetting the document, running simulations and creating figures. If you do not know what to write, either leave this page blank or have a look at the colophon in some of your books.

Electronics and Computer Engineering
Aalborg University
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AALBORG UNIVERSITY
STUDENT REPORT

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Inverters and Charge Controllers

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Abstract:

This project is about charge controllers and inverters as they might be used in a solar power appliance.
Here is the abstract

Contents

Todo list

Preface

Here is the preface. You should put your signatures at the end of the preface.

Aalborg University, October 18, 2017

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Chapter 1

Introduction

In this project we want to talk about inverters and charge controllers with the main focus of bettering our understanding of those. We chose those two components because they are commonly used together in solar power systems.

We expect the reader to have a basic understanding of batteries and solar panels, but will provide some information on those as well.

3

1.1 Examples

You can also have examples in your document such as in example 1.1.

Example 1.1 (An Example of an Example)
Here is an example with some math

$$0 = \exp(i\pi) + 1 \,. \tag{1.1}$$

You can adjust the colour and the line width in the `macros.tex` file.

1.2 How Does Sections, Subsections, and Subsections Look?

Well, like this

1.2.1 This is a Subsection

and this

This is a Subsubsection

and this.

A Paragraph You can also use paragraph titles which look like this.

A Subparagraph Moreover, you can also use subparagraph titles which look like this. They have a small indentation as opposed to the paragraph titles.

Is it possible to add a subsubparagraph?

I think that a summary of this exciting chapter should be added.

Chapter 2

Chapter 2 name

Here is chapter 2. If you want to leearn more about LaTeX 2_ε, have a look at [1], [3] and [2].

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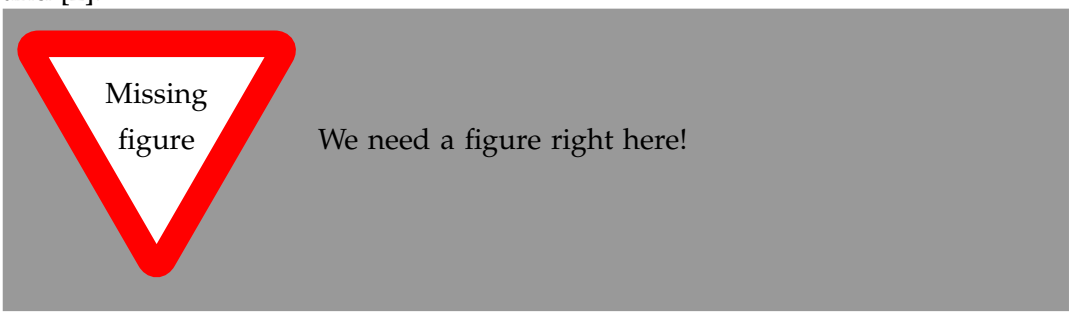


Chapter 3

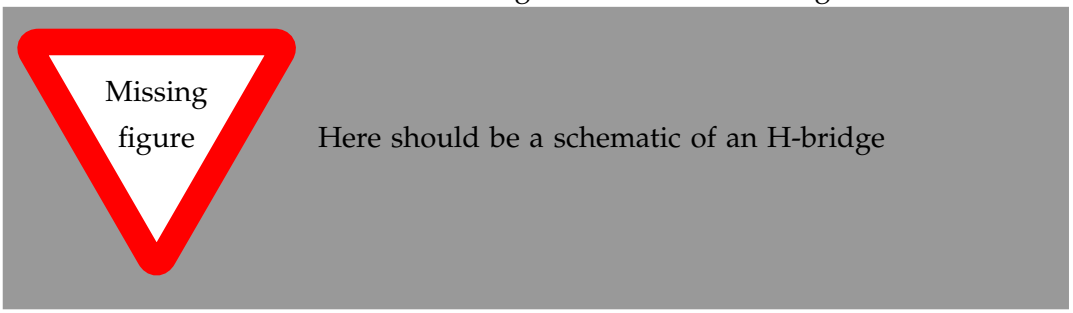
Inverter

3.1 Introduction

After looking at different schematics for the inverter we decided to have a closer look at the H-bridge model. We chose this model because it seemed to fit our knowledge level of electrical engineering while still giving us the opportunity to learn on it.

3.2 General Function

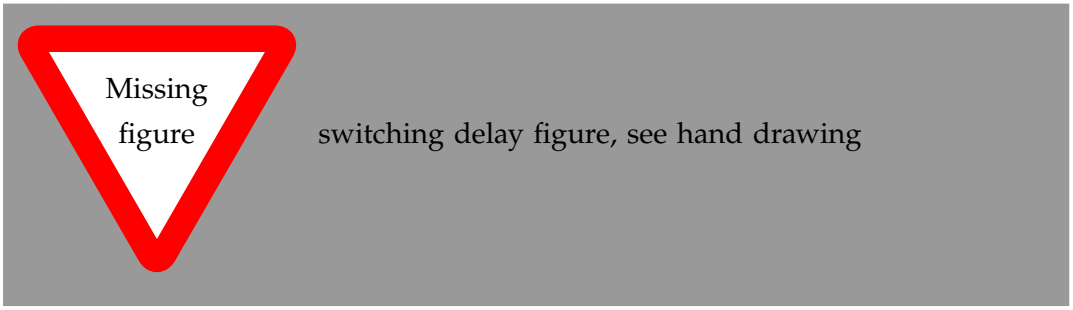
For a schematic representation of the H-bridge please see figure 3.2. The general idea is to periodically invert the current flowing through the AC Load. To achieve this the current has to flow either through **'A'** and **'D'** or through **'B'** and **'C'**.



The switches on either side of the load (**'A'**&**'C'** and **'B'**&**'D'**) are not allowed to be closed simultaneously, because this would result in short-circuiting the DC source.

To ensure that this is no happening we investigated switching **'AD'** with the rising edge of a clock signal and **'BC'** with the negative edge of the same clock.

We found out that, due to ?propagation/switching? time, there is a short overlap in timing, when all transistors would be conducting (as can be seen in figure 3.2.a)



Our next idea was to use two different signals for **'AD'** and **'BC'**, such that the switching delay is taken into consideration. This can be seen in figure 3.2.b.

3.3 Formatting

You have to make two returns to have a new paragraph

This is normal text. **This is bold text!** *this is italics. This is emphatic.*

This is underlined.

"This is in weird quotation marks."

“This is in proper quotation marks.”

‘And this is in single quotes.’

Chapter 4

Conclusion

In case you have questions, comments, suggestions or have found a bug, please do not hesitate to contact me. You can find my contact details below.

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Bibliography

[1] Lars Madsen. *Introduktion til LaTeX*. http://www.imf.au.dk/system/latex/bog/. 2010.

[2] Frank Mittelbach. *The LATEX companion*. 2. ed. Addison-Wesley, 2005.

[3] Tobias Oetiker. *The Not So Short A Introduction to LaTeX2e*. http://tobi.oetiker.ch/lshort/lshort.pdf. 2010.

Appendix A

Appendix A name

Here is the first appendix