

## DESIGN OF DC UNINTERRUPTED POWER SUPPLY (DC UPS)

### ABSTRACT

The usual way to avoid the computer shutdown during the mains failure is to connect an ac uninterruptible power system (UPS). However, there are other possibilities, such as using a dc UPS to obtain the dc output voltages directly from the battery instead of generating an ac voltage to feed the whole power supply. Thus, the topology must operate either from ac mains or from a battery.

The complete simulation of an ac/dc power supply with an internal dc UPS is presented in this project. If we have taken the case of computers where we need three voltage ranges 12v, 5v, and 3.3v. In ordinary case the output of UPS will be ac supply and it will be given to the SMPS, there it will be step down and it will be converted into three range of voltages by SMPS and the output will be regulated, but in this project as the output of UPS is dc it will be directly converted three range of voltages by using buck converters.

DC UPS has less component counts, smaller reactive component size, and better system efficiency. Higher Switching frequency leads to the smaller reactive and filter component size.

A complete simulation of an AC/DC power supply with an internal DC UPS is the main objective of this thesis. The solution is based on the coupling of the UPS to the main transformer. Moreover, the power supply meets all the requirements needed to be used as an Advanced Technology extended (ATX) PC power supply—multiple outputs, power and voltage ratings, size, protections, etc. A simulation model of the system was developed in MATLAB /SIMULINK.