

Solar Panel Based Energy Conservation & Utilization

INTRODUCTION

The mankind must turn its attention to longer term permanent type of energy sources. The most significant such source is solar energy. Solar energy shows promise of becoming a dependable energy source without new requirement of a highly technical and specialized nature for its wide spread utilization. Every year the sun emits 2000 times more energy than the whole world's consumption needs. Assuming eight hours of sunshine on an average on the earth, excluding water bodies, we get approximately 6×10^{15} KWh of energy per year. Using only 5% of this energy we can get 300×10^{13} Kwh of energy which is 60 times greater than world consumption of energy. In addition, there appears to be no significant polluting effects from its use.

Solar energy has the following advantages over conventional energy:

- The energy from the sun is virtually free after the initial cost has been recovered. Depending on the utilization of energy, paybacks can be very short when compared to the cost of common energy sources used.
- Solar and other renewable energy systems can be stand-alone; thereby not requiring connection to a power or natural gas grid
- The sun provides a virtually unlimited supply of solar energy.
- The use of solar energy displaces conventional energy; which usually results in a proportional decrease in green house gas emissions.
- The use of solar energy is an untapped market.

BLOCK DIAGRAM

The basic block diagram of the Solar Panel Based Energy Conservation and Utilization system is shown in the above figure. Mainly this block diagram consists of the following essential blocks.

- Solar Panel .
- Arduino UNO ATMEGA 328
- ULN 2803.
- LCD display.
- Power Supply.
- Relay Driver Circuit.

- Battery Bank.
- Load.
- Switches.
- Voltage Divider Network.
- LED's.

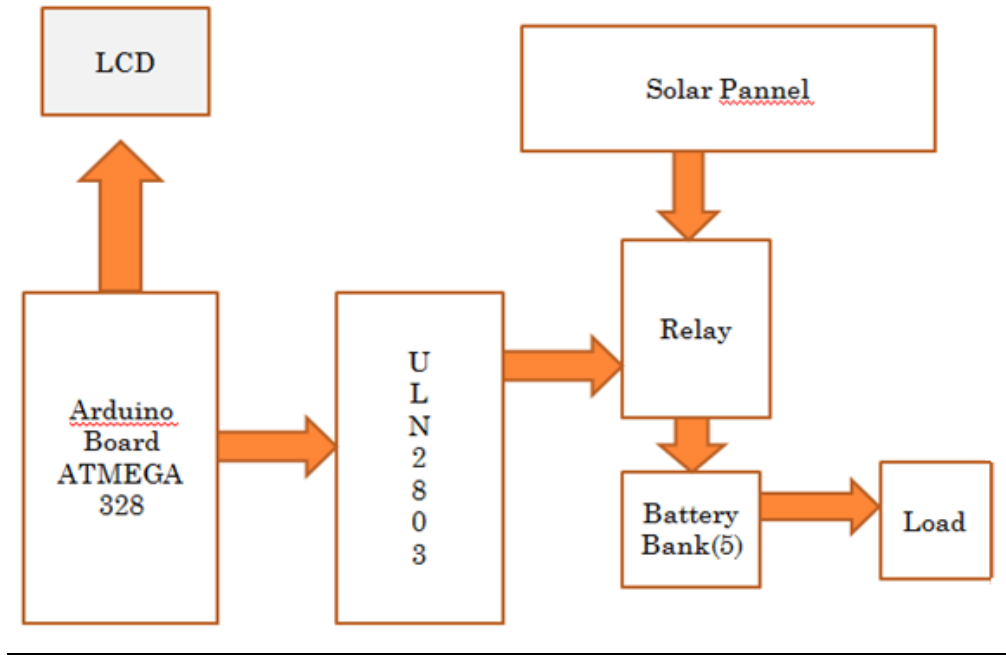


Fig. 3.1. Block Diagram.