INTELLIGENT NiCD BATTERY CHARGER

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ABSTRACT

The intelligent battery charger system is a normal battery charger with a “brain” which is called the microcontroller connected inside the circuit of a conventional battery charger to perform some specific functions. The intelligent battery charger is used to charge the battery automatically with the microcontroller built inside it. The charging procedure and charging speed will vary when battery voltage drops below a certain predefined value and then stops after the voltage rises to the maximum predefined voltage value. The speed of charging will change according to the voltage value of the battery.

Charging the battery for a long time continuously can cause a permanent damage to the battery. This might also cause a fire or an explosion if the battery is left connected to a charging circuit continuously. Besides, the normal batteries are thrown away if the power is used up. This will cause pollution to the environment and human health can be affected. Based on these problems, the project entitled “Intelligent NiCd Battery Charger” is designed to overcome the problems. The aim of the project is to design, develop and built a prototype model of an intelligent NiCd battery charger a low power battery to power the low power application circuit like a camera.

This project can be divided into three parts: First, the microcontroller PIC16F877A is used to control the speed of charging of the circuit by controlling the charging duration using Pulse Width Modulation. The microcontroller also outputs signals to the output indicators like the LEDs to indicate the status of charging of the battery. The next part is the charging circuit. It is built up with a buck converter and some transistors in order to carry out the charging process. The other part is the LCD Display Module which is used to show the status of charging of the battery and it is used to carry out the Built-In-Test to indicate the readiness of the charger for use.