

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

**MODEL CAR CONTROLLED BY STAMP
MICROCONTROLLER**

E.1238

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SUMMARY

The purpose of this project is to study different types of Microcontrollers for controlling various devices such as a Model Car, to select an appropriate Microcontroller, design circuits which will support this Microcontroller and to develop, construct, test and calibrate appropriate sensors and drivers circuits for controlling with the necessary Microcontrollers software the Model Car.

The selection of the Microcontroller was a difficult work because there is a huge variety of Microcontrollers nowadays in the market. After studying various Microcontrollers I select as the most appropriate for the specific case the Stamp Microcontroller (BS II) by Parallax inc. This microcontroller has many advantages compare with other Microcontrollers such as the very small size of it. Actual its size is not bigger than the size of one postage stamp and for that reason is called Basic Stamp Microcontroller. Its Hardware include a small circuit board with a PBASIC interpreter chip, EEPROM, 5-volt regulator, reset circuit, and resonator.

These five components form a complete computer in a very small space. The modular design of the BS2-IC makes them perfect for use in breadboards and printed circuit boards.

Another advantage of the BS2-IC is the programming language used and the easy interface and transfer of the program to the EEPROM. The BASIC Stamps are programmed in a simple version of the BASIC language, called *PBASIC*. This language is easy to be understand, yet well-suited for the many control and monitoring applications that BASIC Stamps are used in. The PBASIC language includes familiar instructions, such as GOTO, FOR..NEXT, and IF...THEN, as well as specialized instructions, such as SERIN, PWM, BUTTON, COUNT, and DTMFOUT.

The Microcontrollers have not any circuits that a human can communicate with them, on the other hand are not design for such jobs as a P.C is designed for. So in order to give the chance to the user to give information as is the destination of the Model Car I use a 16-key keypad with a serial LCD.

The sensors and drivers was an important field for the Model Car because sensors and drivers are similar with the eyes, ears and legs of a human being. Without these circuits the Model Car can not detect its environment and move safely into its destination.

So for vision sensors I decide to use infrared reflective sensors and as touch a water detection sensor. For Model Cars engine used a d.c motor which it was fixed on the model car and a d.c motor acting as a helm.

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