Preface

Our book is targeted for students of electronics and computer sciences. First part of the book contains 15 original applications working on the PIC microcontroller. They are: lighting diodes, communication with RS232 (bit-banging), interfacing to 7-segment and LCD displays, interfacing to matrix keypad 3 x 4, working with PWM module and other. They cover 1 semester teaching of microcontroller programming or similar clases. The book has schematics diagrams and source codes in assembly with their detailed description.
All tests were prepared on the basis of the original documentation (data sheets, application notes). Sometimes, encountering problems we looked for help on various foums in the world with people involved in the hi tech challenges.

Next three chapters: The Stack, Tables and Table instruction and Data memory pertains to PIC18F1320. Software reffered to is also in assembly laguage.

Finally we describe the application of the PIC24FJ microcontroller with the 240x128 LCD display and the analog accelerometer sensor.

Testing board description

Presented in the book applications were implemented on the original testing board called Microcon4. The hardware is uncomplicated and showing parts of entire schematics is intended to illustrate the easy of use of various peripherial devices. We use following peripherial devices:

- ICSP In-Circuit-Serial Programming device
- 7-segment display
- TTL/CMOS driver ULN 2803 for Port A and Port B
- LCD display
- Matrix Keypad
- I2C expander PCF 8574
- EEPROM 24C02 and RTC PCF8583
- UART communication bus with MAX 232 IC

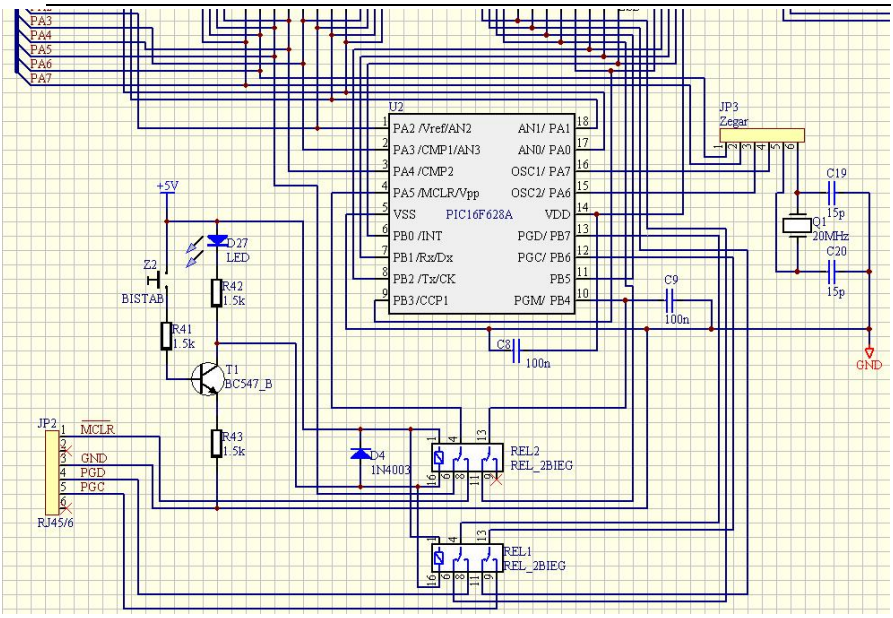

Fig. 1. In Circuit Serial Programing ICSP device connected to JP2

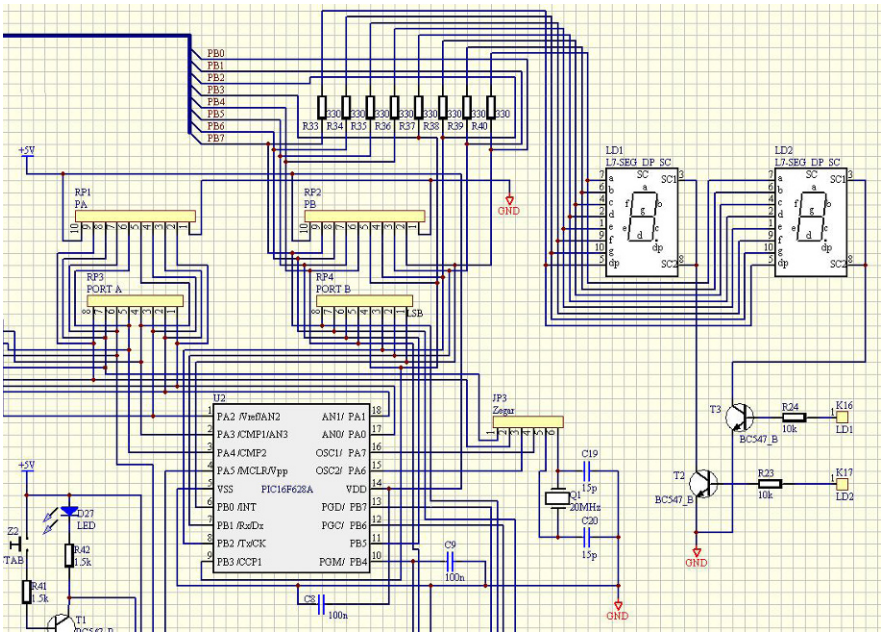

Fig. 2. 7-Segment Display connected to port B

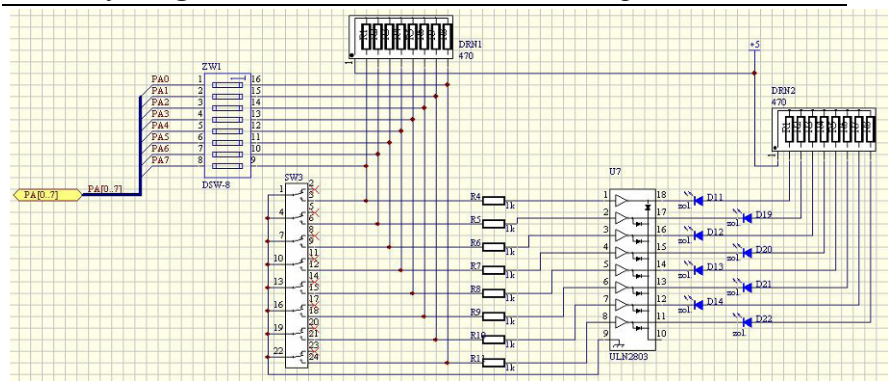

Fig. 3. Using TTL/CMOS driver ULN 2803 for port A

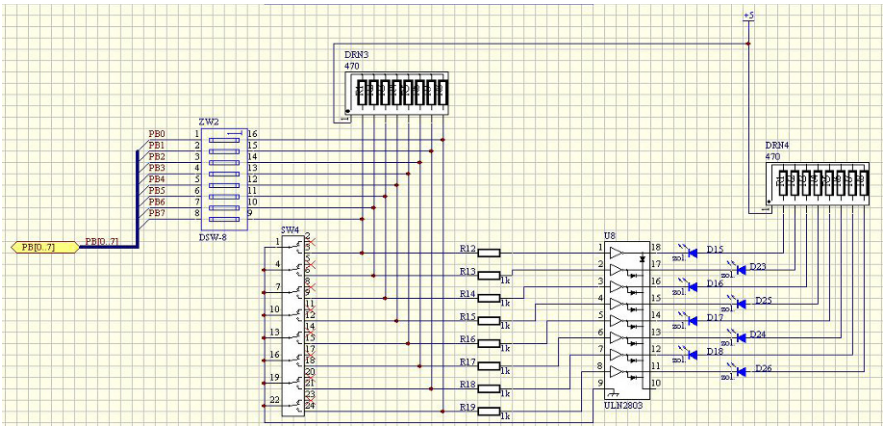

Fig. 4. Using TTL/CMOS driver ULN 2803 for port B

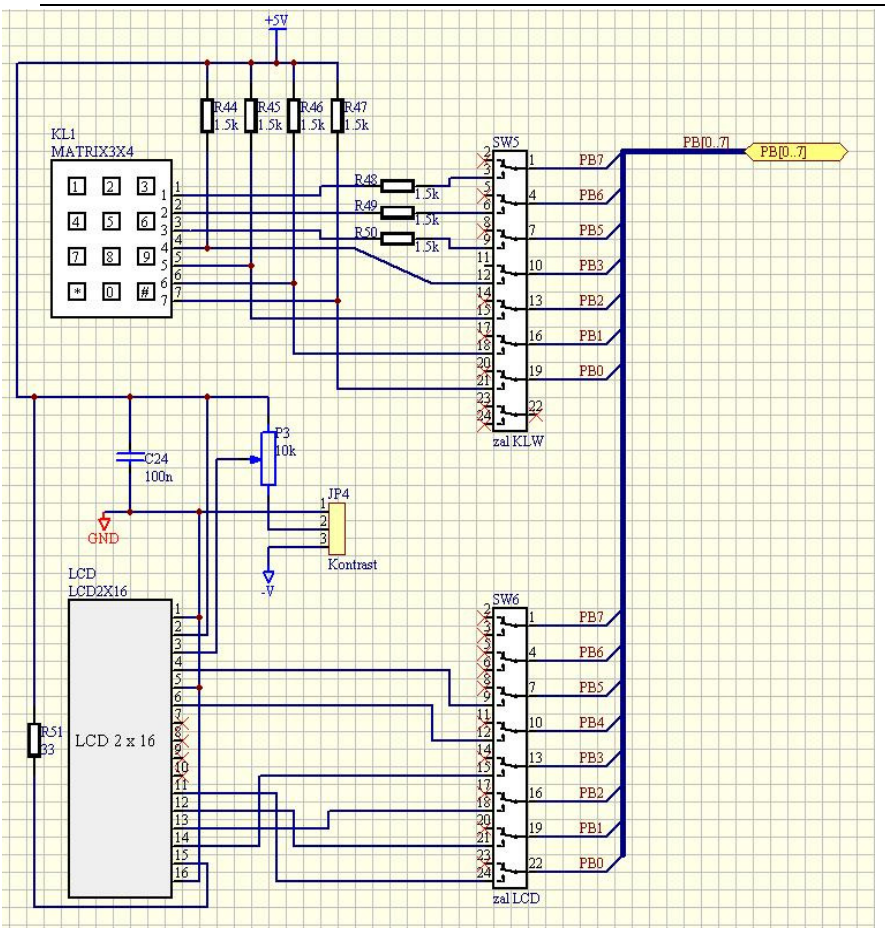

Fig. 5. Connection LCD Display and Matrix keyboard to port B

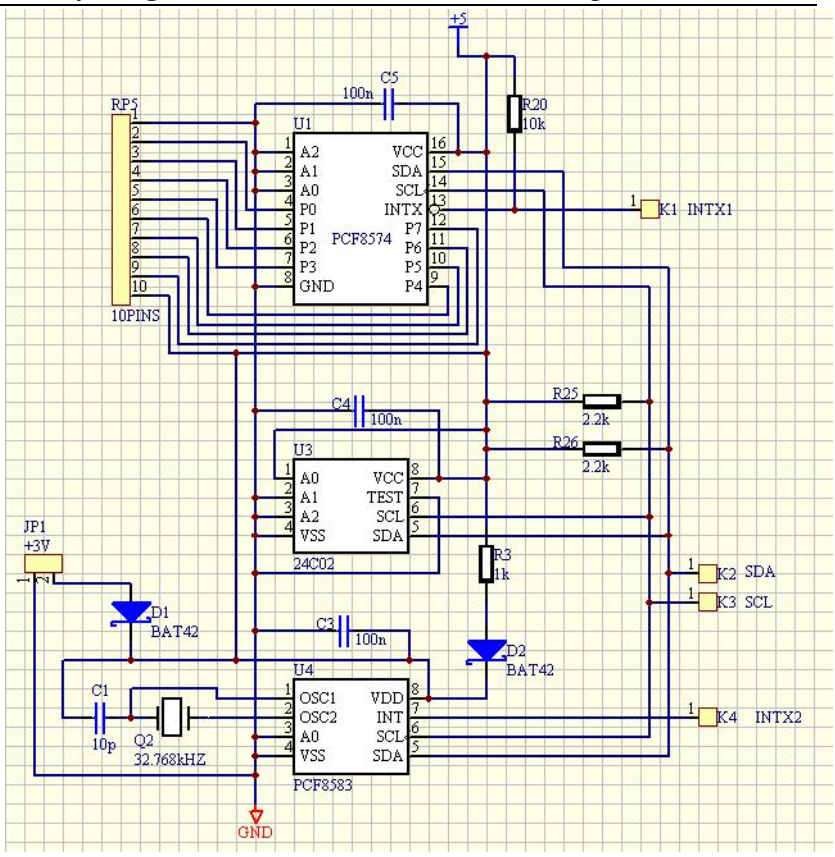

Fig. 6. Connection Expander I2C, PCF8574 EEPROM 24C02 and RTC PCF8583

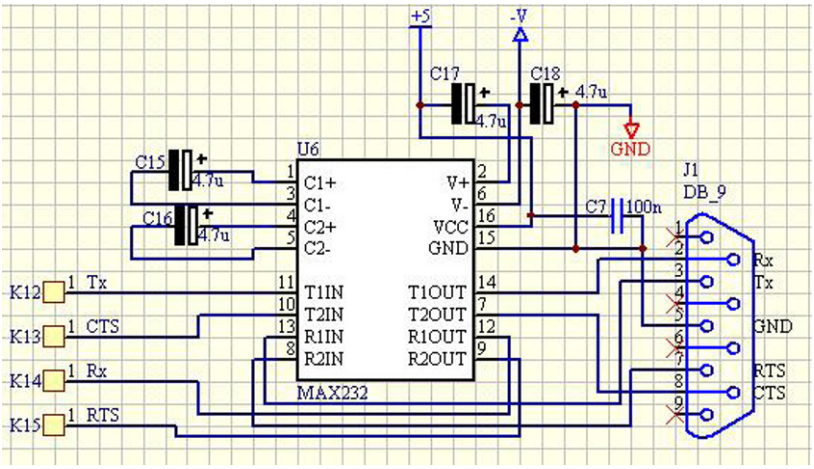

Fig. 7 UART communication circuit apply MAX232

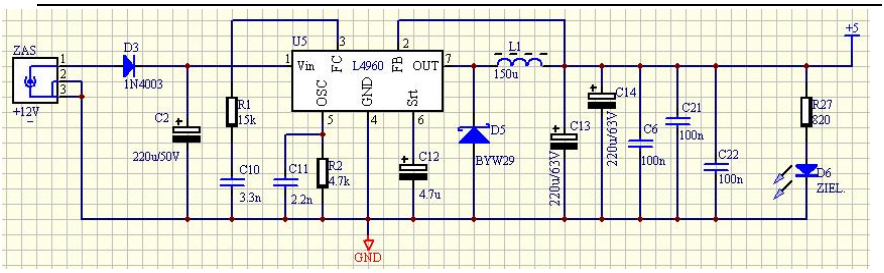

Fig. 8. Switching power supply using the U5 L4960 device.

Additionaly we present the schematic for typical programmer:

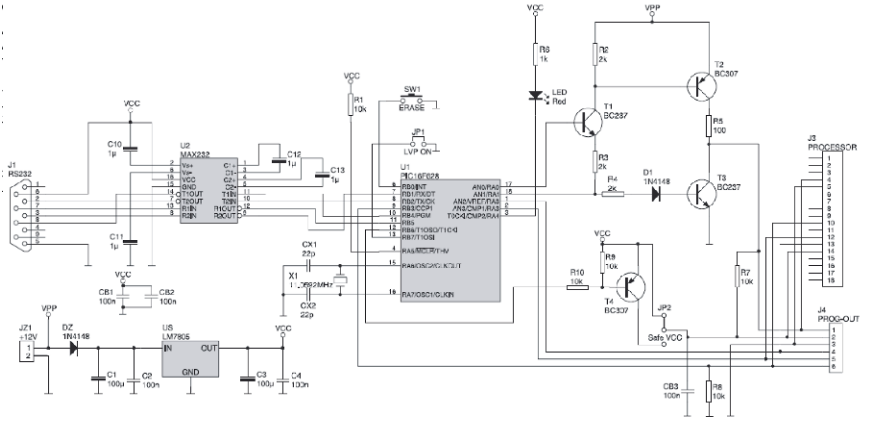

Fig. 9. Schematic diagram of ICSP programmer