

ENGINE

Teaching online electronics, microcontrollers and programming in Higher Education

**Output 2: Online Course for Microcontrollers:
syllabus, open educational resources**

Open project leaflet: Module_2-4 LCD 16x2

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Declaration

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Funding Disclaimer

This project has been funded with support from the European Commission. This report reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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Executive summary

This file contains open project.

Chapter 1: Open project 1

Draw a circuit in the Proteus Design Suite and write a suitable program that the PIC18F4550 function as a simple alarm system. The microcontroller uses a 16x2 liquid crystal display as output device. Instead of magnetic reed switches, dip switches are used.

- System function:
 - in the protection area there are 4 switches/sensors and they are grouped in 2 zones
 - Zone A has 3 switches/sensors
 - Zone B has 1 switch/sensor
 - each zone can be activated independently of the other using 2 switches
 - the alarm activates a buzzer
 - the buzzer is ON until the alarm zone is deactivated
- Microcontroller's inputs:

Table 1. Pins' description

PIN	Description
RA0	Activation of Zone A
RA1	Activation of Zone B
RB4	Switch/sensor 1 – Zone A
RB5	Switch/sensor 2 – Zone A
RB6	Switch/sensor 3 – Zone A
RB7	Switch/sensor 4 – Zone B

- All inputs are activated with "0"
- The switches/sensors trigger interrupts (RB port change interrupts)

