ABSTRACT

The object of this project is to design and manufacture a small mobile weather data station. The basic design requirements of the weather data station is to have small dimensions, to provide automatic measurements, to transmit wirelessly the results but also be easy to transport. Special emphasis has been given to the selection of reliable sensors, suitable wire connections as well as the readability of measurements, through virtual instruments designed by LabVIEW software.

The weather station consist of a temperature sensor PmodTMP3, a light sensor, rain sensor, wind speed sensor, wind direction sensor and humidity sensor. After the installation, all sensors have been tested and calibrated in order to ensure the reliability of the system.

After connecting the sensors to the data processing system myRIO and the laptop, all data values were transferred to the LabVIEW software.

Then by programming the appropriate virtual instruments, all weather data were processed and transmitted wirelessly to a smartphone or tablet achieving in this way, data access from almost any place (Wi-Fi availability is necessary).

Furthermore several tests have been made by using other sensors or measuring instruments of higher accuracy in order to calibrate the system and ensure that experimental results have the minimum possible errors.

At the end a user manual has been produced so as to provide guidelines for use and information about the technical specification of the sensors.

Concluding, it should be noted that this project of a mobile weather data station can be used successfully in all areas where monitoring weather data is necessary without the need of human presence.