

EMK310 Home Practical Assignment

Am I Breathing?

FINAL REPORT

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# 0. Introduction

Provide a brief overview of your completed practical.

# Respiratory sensor

[Peer Review Criteria 1 - 4]

Describe and justify the design and implementation of your sensor in detail. Demonstrate the performance of the sensor and discuss.

# Implementation of ADC

[Peer Review Criteria 5 - 7]

Describe the implementation of the ADC in detail and provide results.

## Description of implementation

## Evidence of correct functioning

# Calibration

[Peer Review Criteria 8 -10]

Describe the implementation of the calibration in detail and provide results.

## Description of implementation

## Evidence of correct functioning

# Respiration rate detection

[Peer Review Criteria 11 - 14]

Describe the implementation of the respiration rate detection in detail and provide results.

## Description of implementation

## Evidence of correct functioning

# Breathing difficulty alert

[Peer Review Criterium 15]

(Optional bonus marks) Describe the algorithm used to detect breathing difficulty. Leave empty if not implemented (do not remove the heading).

# LED output

[Peer Review Criteria 16 - 18]

Describe the implementation of the LED driving algorithm. Show and discuss results obtained.

## Description of implementation

## Evidence of correct functioning

# PWM output

[Peer Review Criteria 19 - 21]

Describe the implementation of the PWM in detail. Provide and discuss results.

## Description of implementation

## Evidence of correct functioning

# Interrupts

[Peer Review Criteria 22 - 24]

Describe the implementation of the two different interrupts in detail. Provide and discuss evidence of at least three successive events for both interrupts.

## Description of implementation

## Evidence of correct functioning

# Touch start/stop

[Peer Review Criteria 25 - 27]

Describe the implementation of the touch start/stop sensor and algorithm in detail. Provide results and discuss results.

## Description of implementation

## Evidence of correct functioning

# Integration

[Peer Review Criterium 28]

Describe the integration of the system and provide a functional block diagram. Provide evidence that successful integration occurred.

# Conclusion

Provide a brief overview of the strengths and shortcomings of the system. Use the evidence in the report to state whether the system has been implemented successfully. Also mention future work that can be done to improve the system.

# EEPROM

[Peer Review Criteria 30 - 31]

ONLY COMPLETE THIS SECTION IF YOU HAVE A REDEMO FOR PRACTICAL 1.

Describe the implementation of the EEPROM in detail. Provide results of a successful write to and read from the EEPROM.

## Description of implementation

## Evidence of correct functioning (read and write)