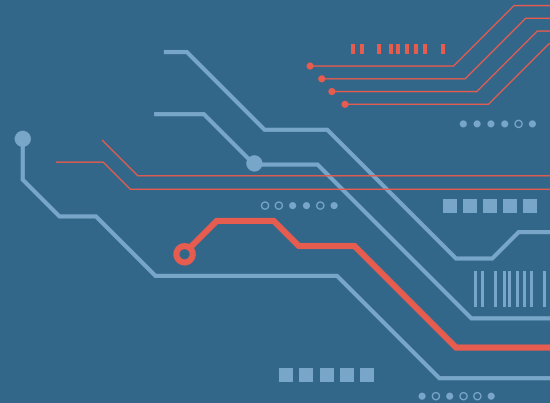# T.O.H.R

Temperature, Oxygen and Heart Rate measuring device - Team 2

INTRODUCTION

T.O.H.R is an advanced health monitoring system designed to measure and track vital physiological parameters in the human body, including heart rate, body temperature, and blood oxygen levels. Inspired by the continuous rhythm of the human heartbeat, this innovative system provides real-time insights into the body's vital signs.
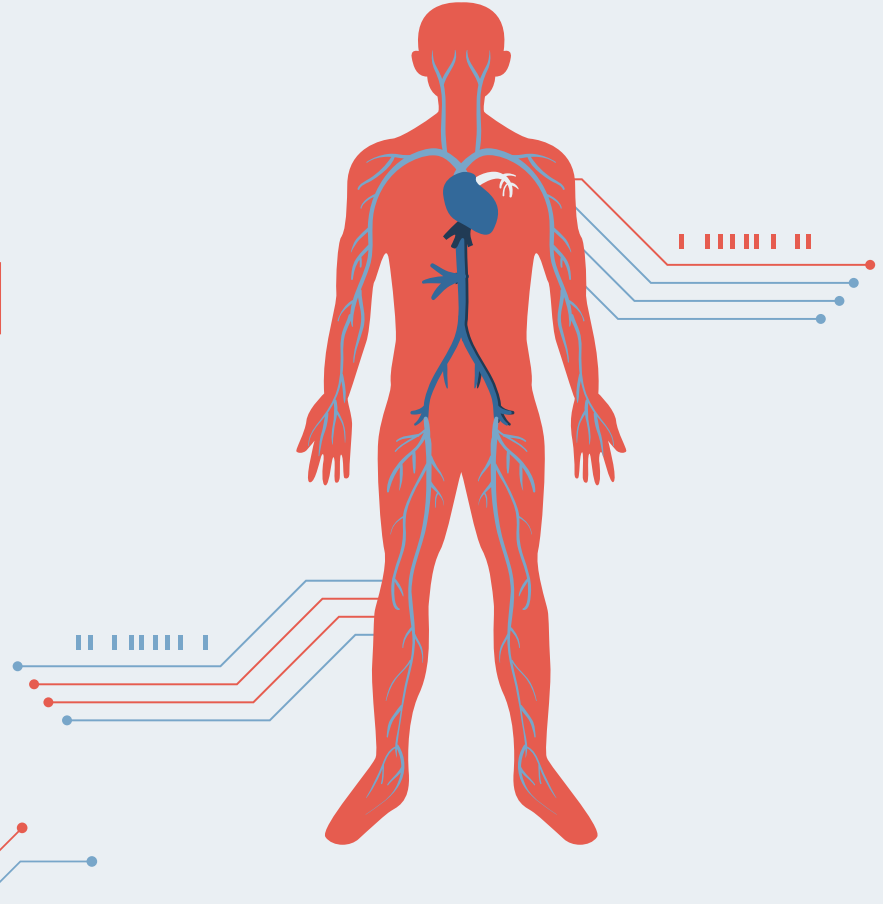
TABLE OF CONTENTS

01 Objectives

- Measure vital parameters accurately and provide early diagnosis of abnormal conditions.

- Enhance health monitoring, enable timely intervention, and support personalized care for proactive well-being

02 Methodology

- Employing continuous sensing to gather real-time data on vital parameters.

- Utilizing targeted analysis techniques for in-depth examination and insights.

03 Results Analysis

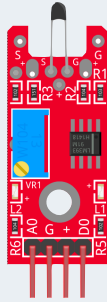- Visual presentation of analysis results for effective communication with the patient.

04 Conclusions

- Implementation of a soothing routine to promote patient relaxation.
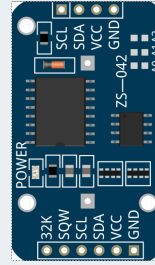- Continuing the routine until the patient's vital parameters reach a stable state.
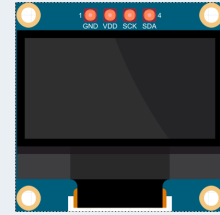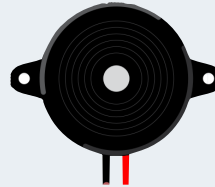
Hardware

KY-028

DS1307

SSD1306
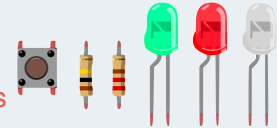

MAX32664

Buzzer

Passive electronics

Data analysis

Parameters measured

Oxygenation

Indicator for hypoxia

Heart rate

Indicator for stress

Temperature

Indicator for fever
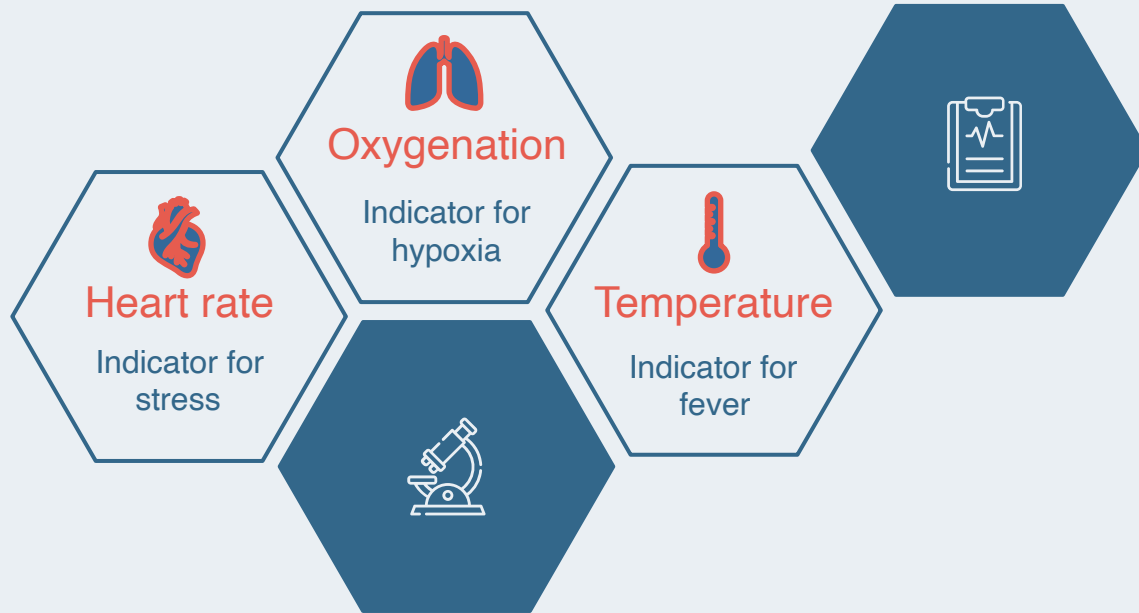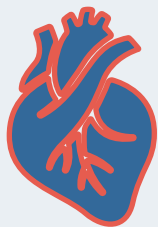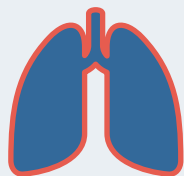
Heart rate analysis

Treshold low: 60 bpm
Treshold high: 100bpm

Temperature measurement is based on the average calculated in 15 seconds of measurements. Correlated by relative accuracy.

Oxygen analysis

Treshold: 95%

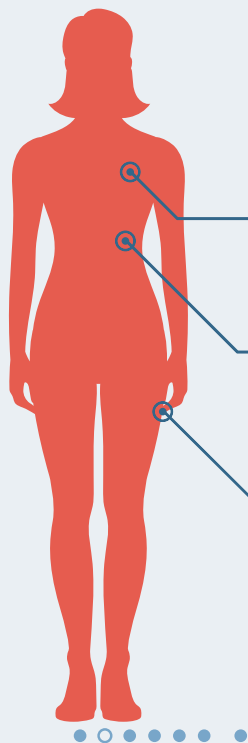Temperature measurement is based on the average calculated in 15 seconds of measurements.

Temperature analysis

Treshold: 26°C

Temperature measurement is based on the average calculated in 15 seconds of measurements.

ANALYSIS RESULTS

Failure Conditions

- Null value
- Outliers
- Confidence

- Null value
- Outliers

- Environmental temperature

Elaboration

Each data is associated with an uncertainty value computed on the mean value.
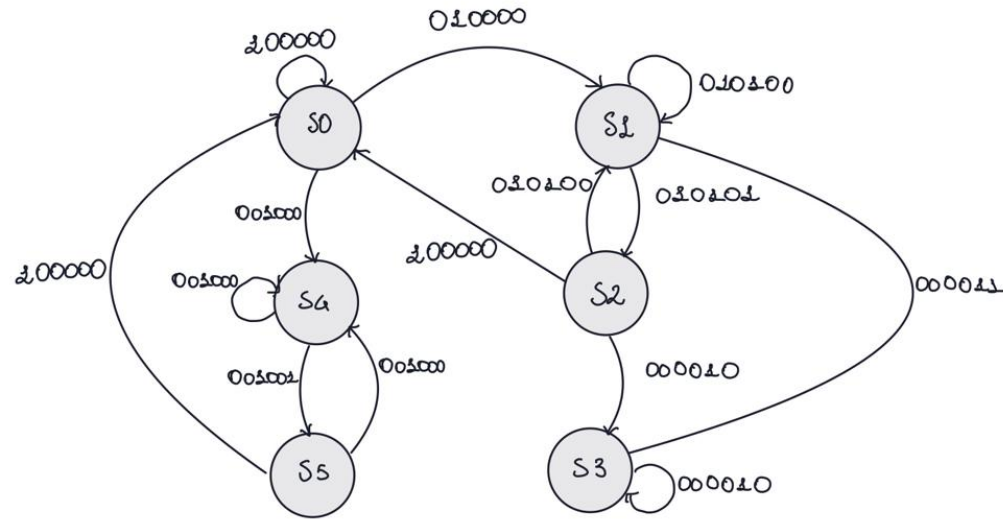The relative uncertainty expresses the accuracy of the measure.

# Software protocol

Finite state automaton

Finite state automaton - states

S0	S1	S2	S3	S3	S3
Continuous	HR/OX	HR/OX - analysis	Breathe	Temp	T - analysis

Power consumption analysis

The power consumption of the sensors is based on datasheet informations and it is done in the hypothesis that the sensors are always up and running. This way we can estimate a battery life duration of 13 Hrs 32 Min*.

- 24% ssd1306
- 2% ds1307
- 23% max32664
- 51% Ky-028
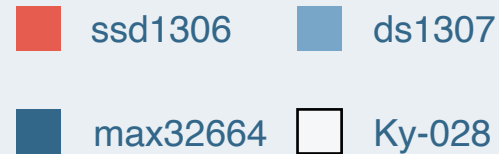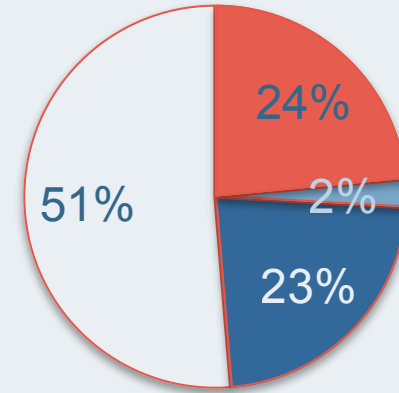
*external battery supplying only sensors with 850mAh capacity at 3.3v

CONCLUSIONS

Our device is a valid medical aid with good future perspectives as a wearable product that performs continuous monitoring and in depth on demand analysis