



**MAKROMEK**  
endüstriyel

# Smart Medical Thermometer

**Makromek Endüstriyel Mekatronik San. Tic. LTD. ŞTİ.**

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# Team Members

**Makromek Endüstriyel Mekatronik San. Tic. LTD. ŞTİ.**



## **Dr. Ahmet MERT, Research Engineer**

- Received the B.Sc degree in Electronics Engineering in 2006.
- Received M.Sc degree in Mechatronics Engineering in 2009 from Marmara University.
- Received the Ph.D. degree in Biomedical Engineering at Istanbul University.
- He has been with the Department of Electrical and Electronics Engineering, Piri Reis University since 2009.

## **Ömer SEÇGİN, General Director**

- Received the B.Sc and M.Sc degrees in Mechanical Engineering at Firat university.
- He is currently pursuing the Ph.D. degree in mechanical engineering at Sakarya University.
- He has been with the Department of Marine Engineering, Piri Reis University since 2010.

# Introduction

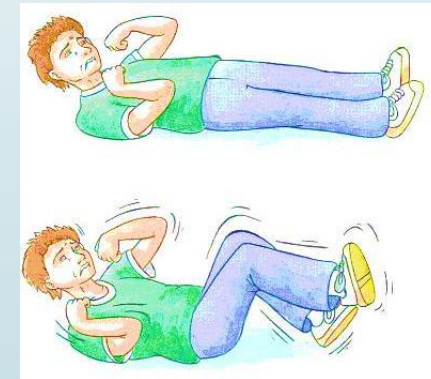
## Conventional Medical Thermometers

- Simple design, but not comfortable.



- Parents must check the fever periodically, which causes lack of sleep.

- Turn the device on
- Push the button
- Wait for measurement
- Read the value
- Turn the device off
- After a while, repeat the steps ,and check fever.



*These are not prevent to suffer a seizure*

- Undetected high fever between measurement intervals may be life-threatening.

- No continuous monitoring

# The Solution

**The objective;**

**To prevent children or babies from the high fever**

**The main principles of the designed smart medical thermometer;**

- Wearable.
- Continuous monitoring and detection of fever.
- Activate the alarm in case of high fever and room temperature
- These functions should be available indoors and outdoors (e.g, in office, on the bus etc.)

**Thus, Parents can check and detect the fever**

**without**

- Waiting around the child or baby
- Fear of the high fever

**while**

- sleeping in the other room,
- cooking,
- sitting in the garden,
- working in the office,
- travelling.

# The Designed Devices

**The system consists of three parts;**

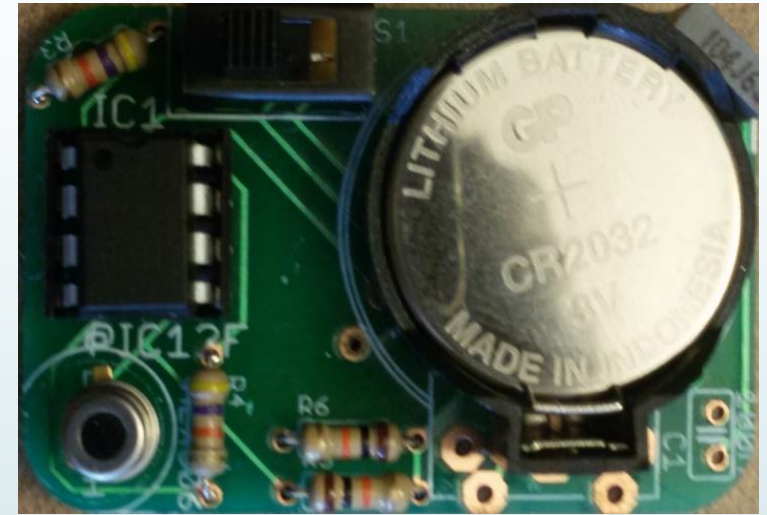
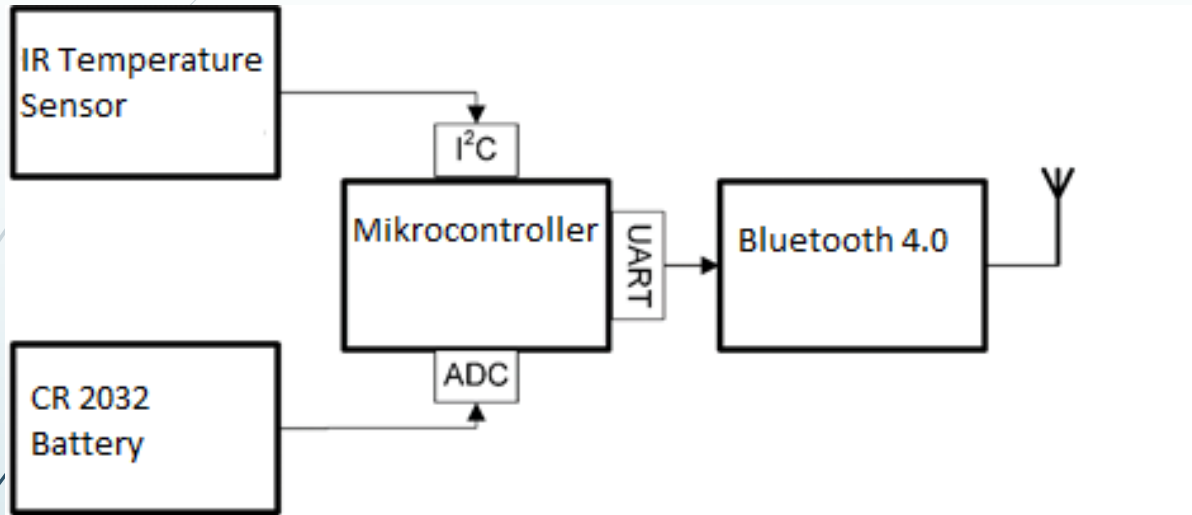
- Measurement Device.
- Alarm and Indicator Device.
- Mobile Application.

**Basically,**

- Measurement device transfers the fever and battery data to the alarm device via Bluetooth.
- Alarm device is the active detector of the fever, and shows data, and sends them to mobile app. via Wi-Fi modem.
- Mobile application is used to monitor the fever when the parents are outside.



# The Measurement Device



**The block diagram of the measurement device**

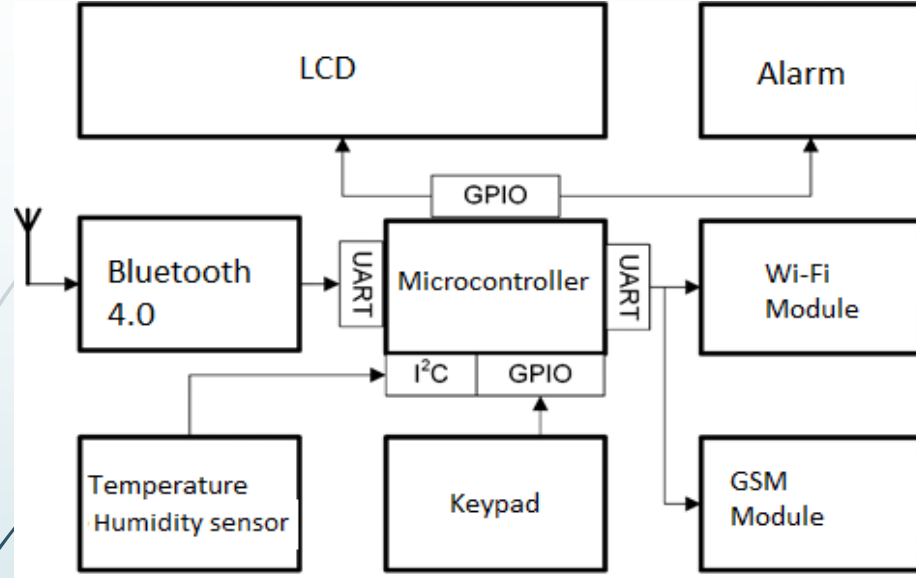
**Printed circuit board of the device**

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- Ultra low power
- Small form
- Contactless temperature sensor

# The Alarm Device

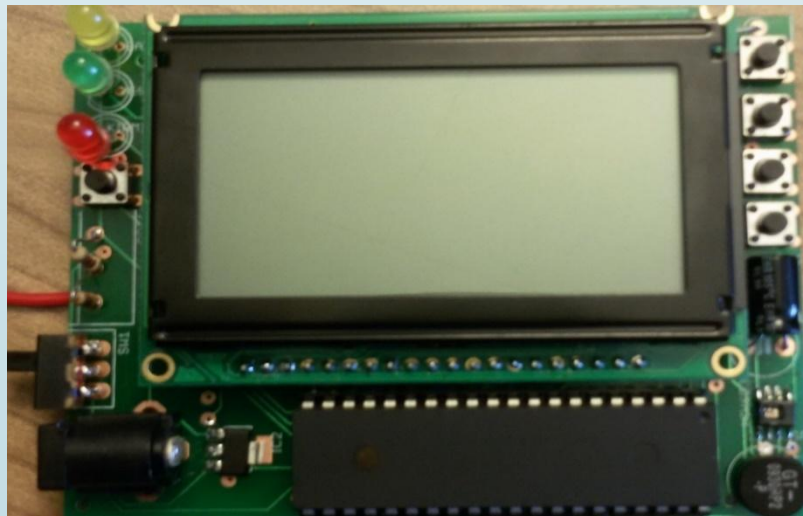
The block diagram of the alarm device



The device during the operation



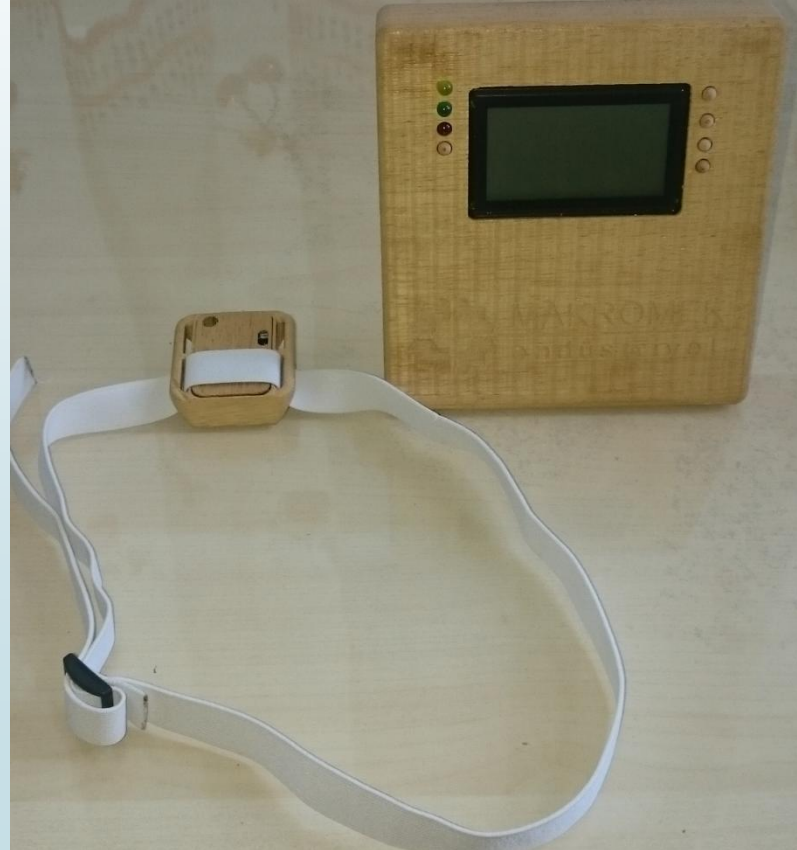
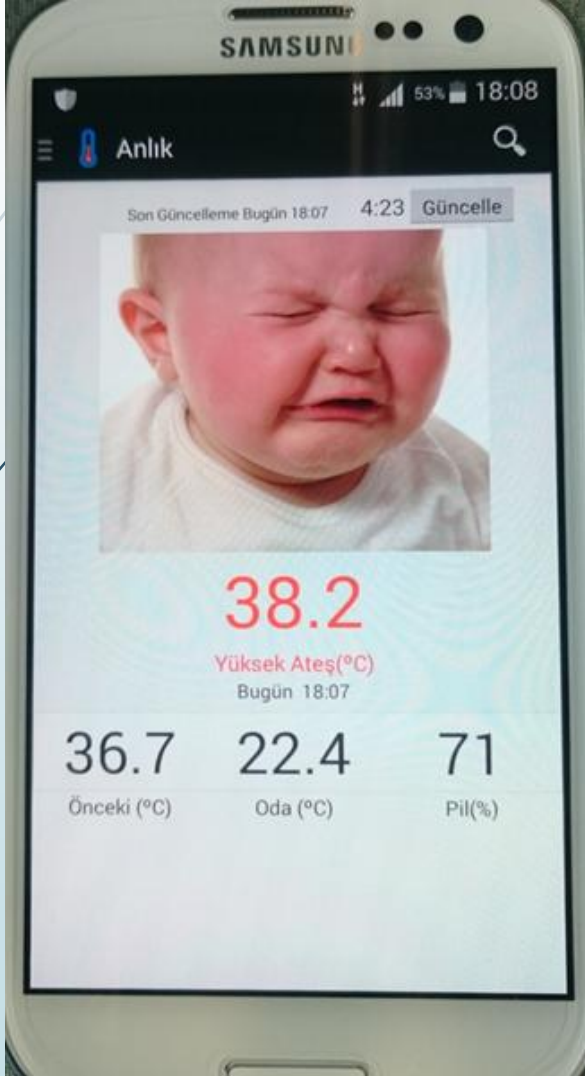
Printed circuit board of the device



- Battery or Adapter input
- Alarm function
- Adjustable alarm high- low limits

# The Mobile Application

- It can be installed on any android based mobile device.
- Parents can monitor the data for the matched device using ID.
- User selected high and low limits can be entered.





# Analysis

- We successfully designed and implemented the devices.
- The overall system works properly.
- Patent pending
- We expect that the followings will care about this product;
  - 19 million families
  - 1191 hospitals
  - 4254 health center in Turkey.
- Market share is estimated as 40%

### Break-even Analysis

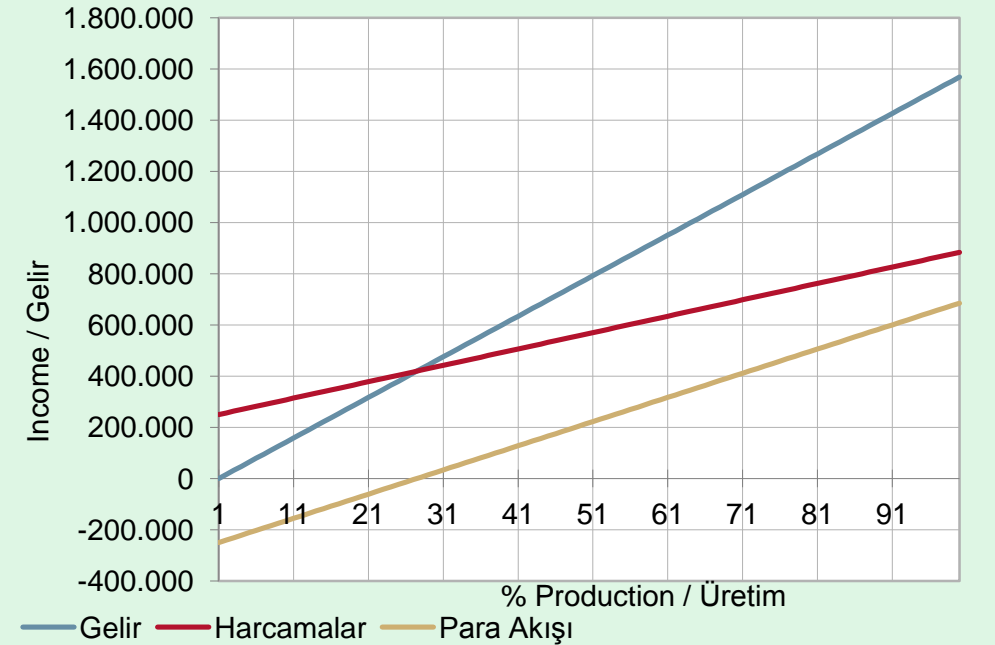
Name: Ömer SEÇGİN

Adress: Makromek Endüstriyel Mekatronik Sanayi Ve Ticaret Limited Şirketi  
İSTANBUL TEKNOKENT, Üniversite Mahallesi Sarıgül Sokak  
No:37/1  
Argem Binası Ofis No:15 Avcılar İstanbul  
[info@makromek.com](mailto:info@makromek.com)

Total Selling Number	16.000
Average Selling Income Per Part	99,00
Estimated gross income	1.584.000
Operational fixed outgoings	198.000
Addition cost per part	38,00
Addition cost per part %	2,00
Management expenses	52.000

Prepared by Ömer SEÇGİN

Tarih September 07, 2015



# Thank you for your listening

## Ömer SEÇGİN

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