Pulmonary Edema Monitoring System

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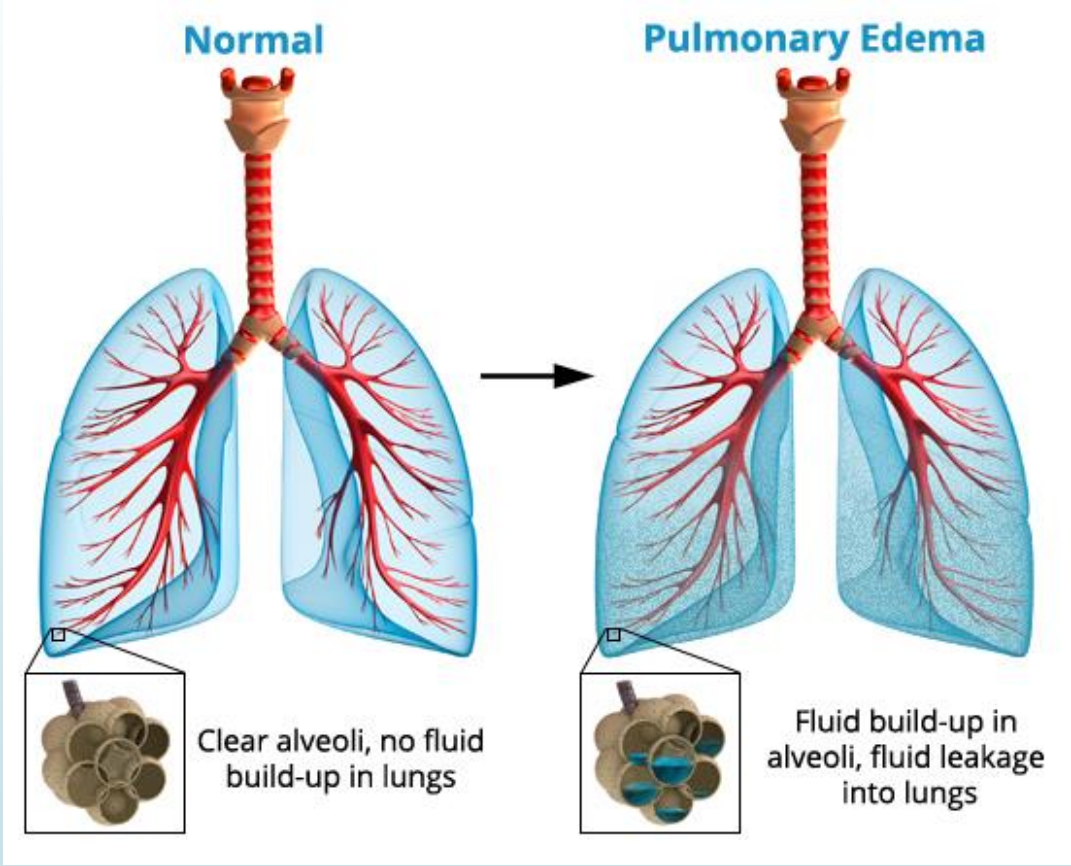
INTRODUCTION

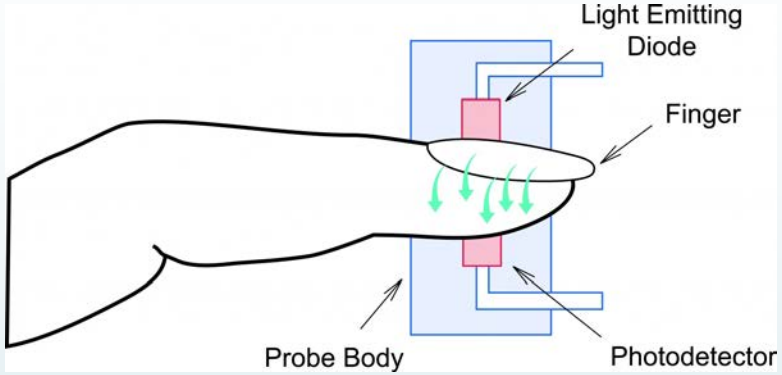
PULMONARY EDEMA

- Fluid accumulation in alveoli
- Breathing difficulty
- Increased muscle activity
- Cardiogenic
- non cardiogenic

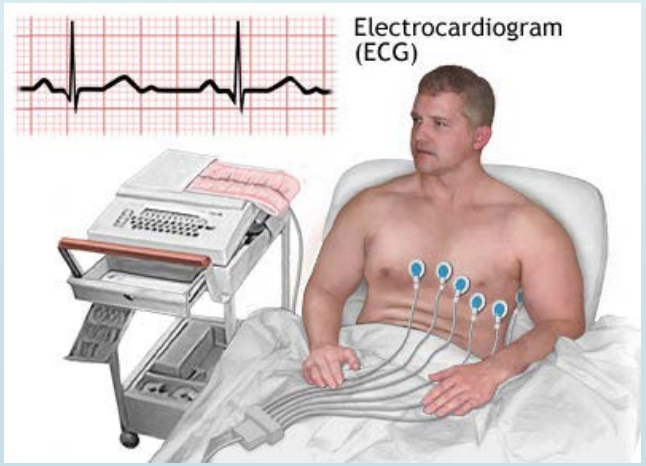


PRESENT METHDOLOGIES

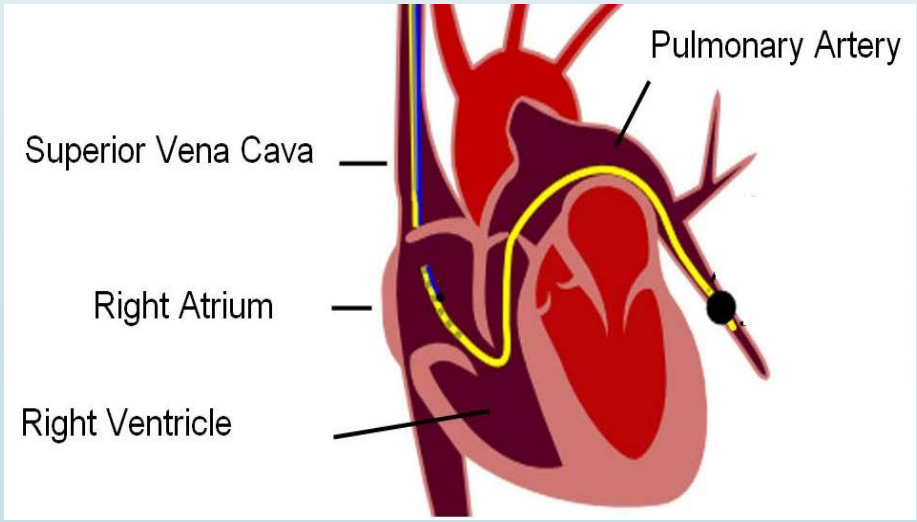
X-RAY



PULSE OXIMETRY



ECG



CATHETERIZATION

LIMITATIONS

- X-ray causes radiation hazards
- Continuous monitoring not possible
- Invasive methods are unpleasant to patients
- Pulse oximetry sensitive to movement
- Lack of accuracy

PROPOSED SOLUTION

- Monitor Respiratory muscle activity
- EMG: Bio potentials of muscle
- EMG : 5-15µV , 10-150Hz
- High for edema patient
- Non-invasive

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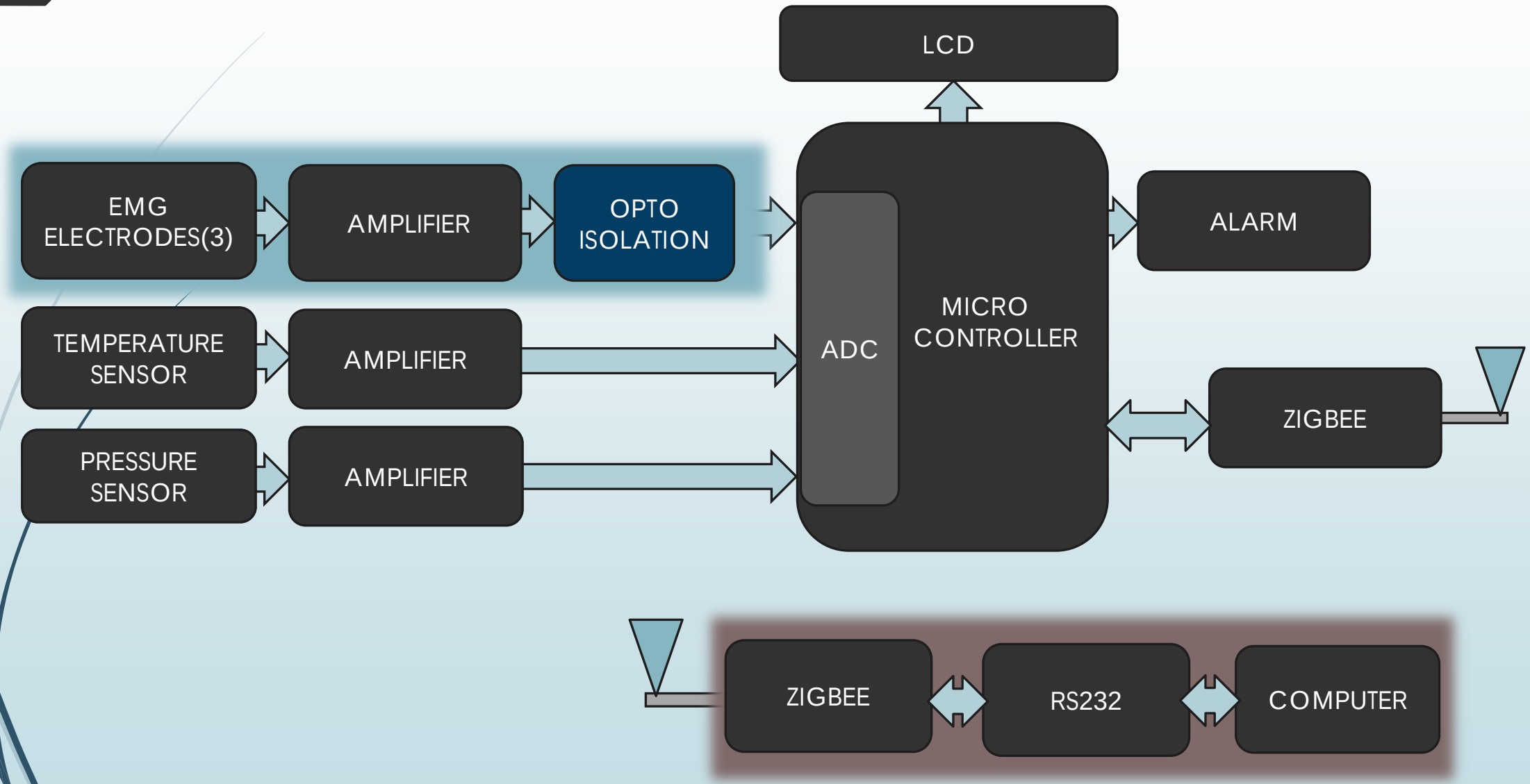
BLOCK DIAGRAM

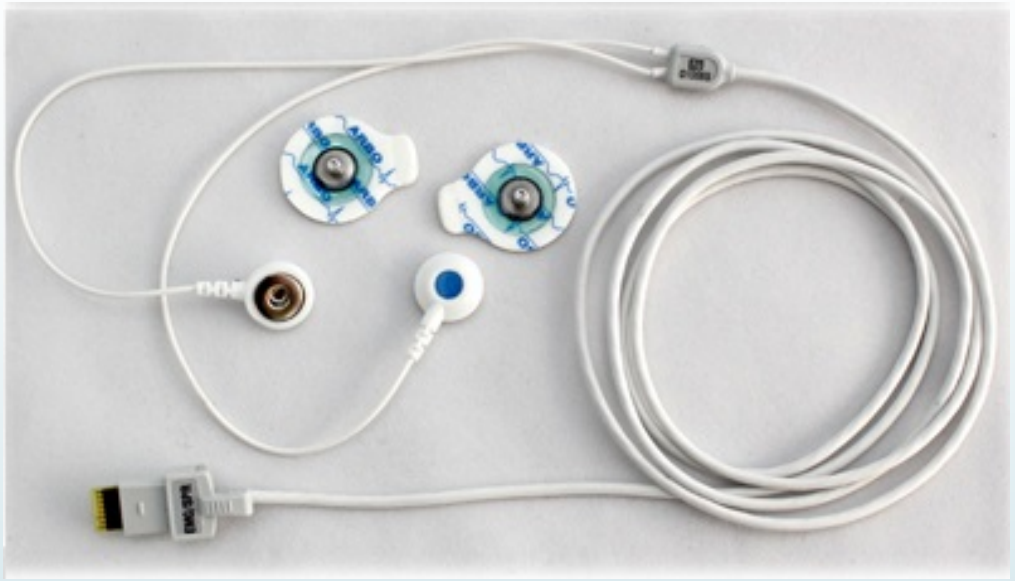


SENSORS

THERMISTOR

NTC

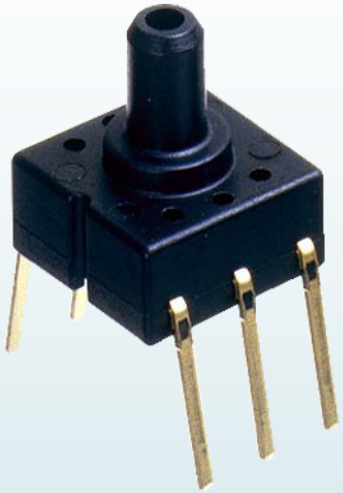
-50 to 150 °C



SKIN ELECTRODE

Impedance :40K

Silver plate

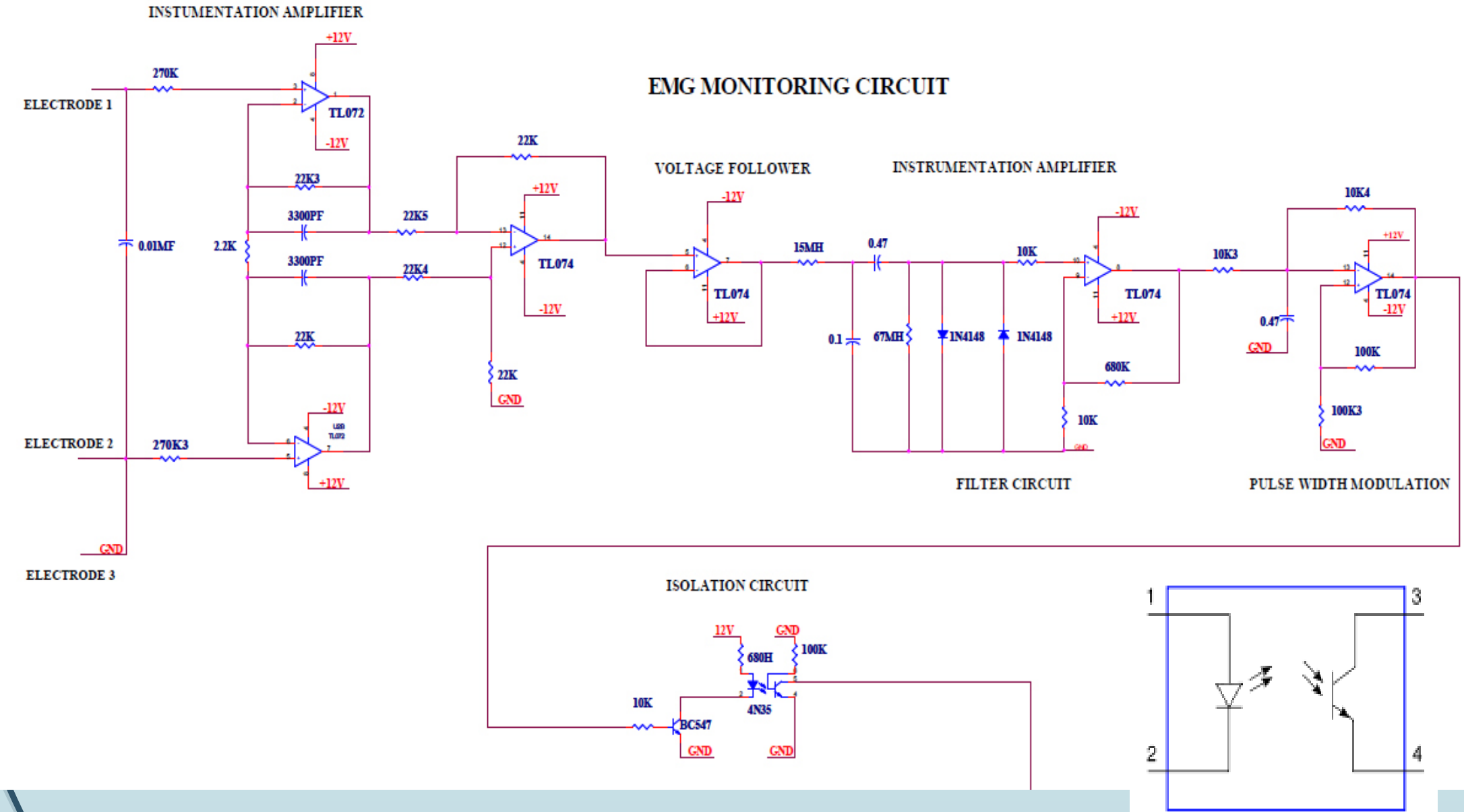


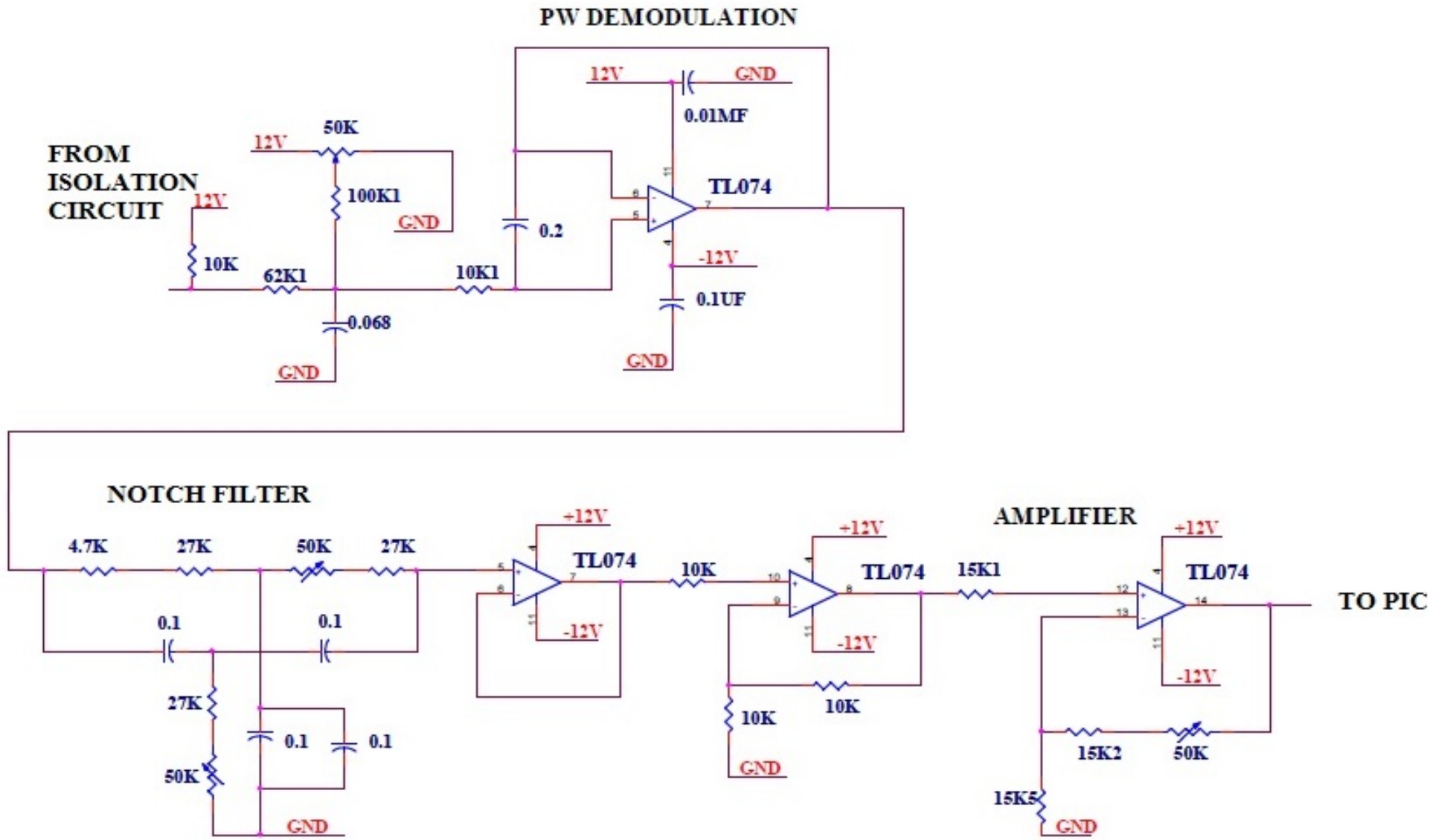
PRESSURE SENSOR

Si piezo resistive

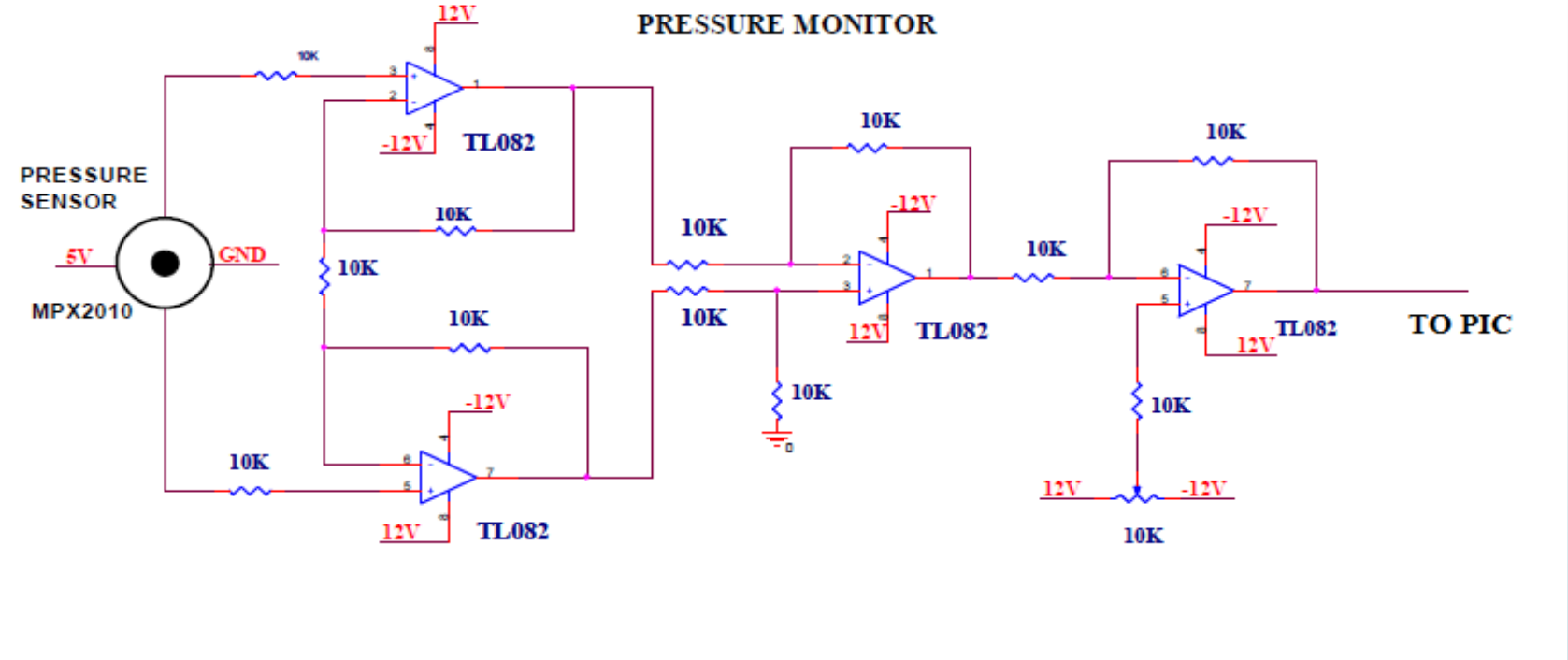
Electric response

EMG MONITOR CIRCUIT

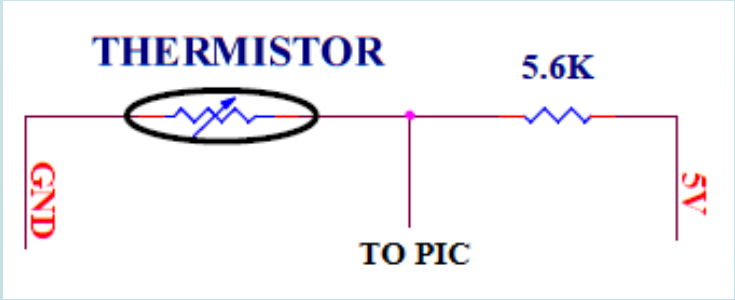



PW DEMODULATION
FROM ISOLATION CIRCUIT
12V
50K
100K1
GND
10K
62K1
0.068
10K1
0.2
TL074
0.01MF
-12V
0.1UF
NOTCH FILTER
4.7K
27K
50K
27K
0.1
0.1
+12V
TL074
-12V
10K
AMPLIFIER
15K1
15K2
50K
15K5
TO PIC

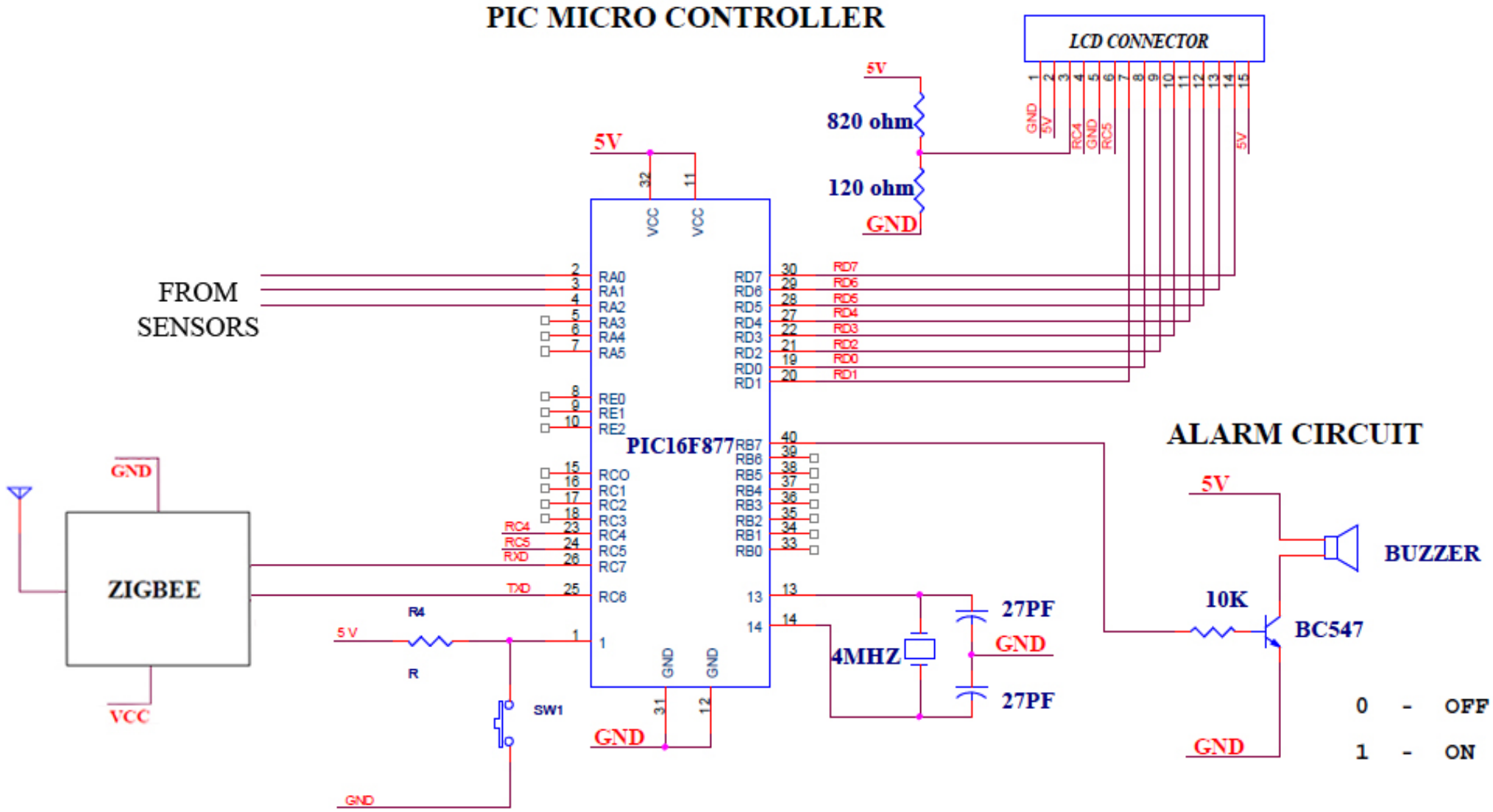
PRESSURE MONITOR CIRCUIT



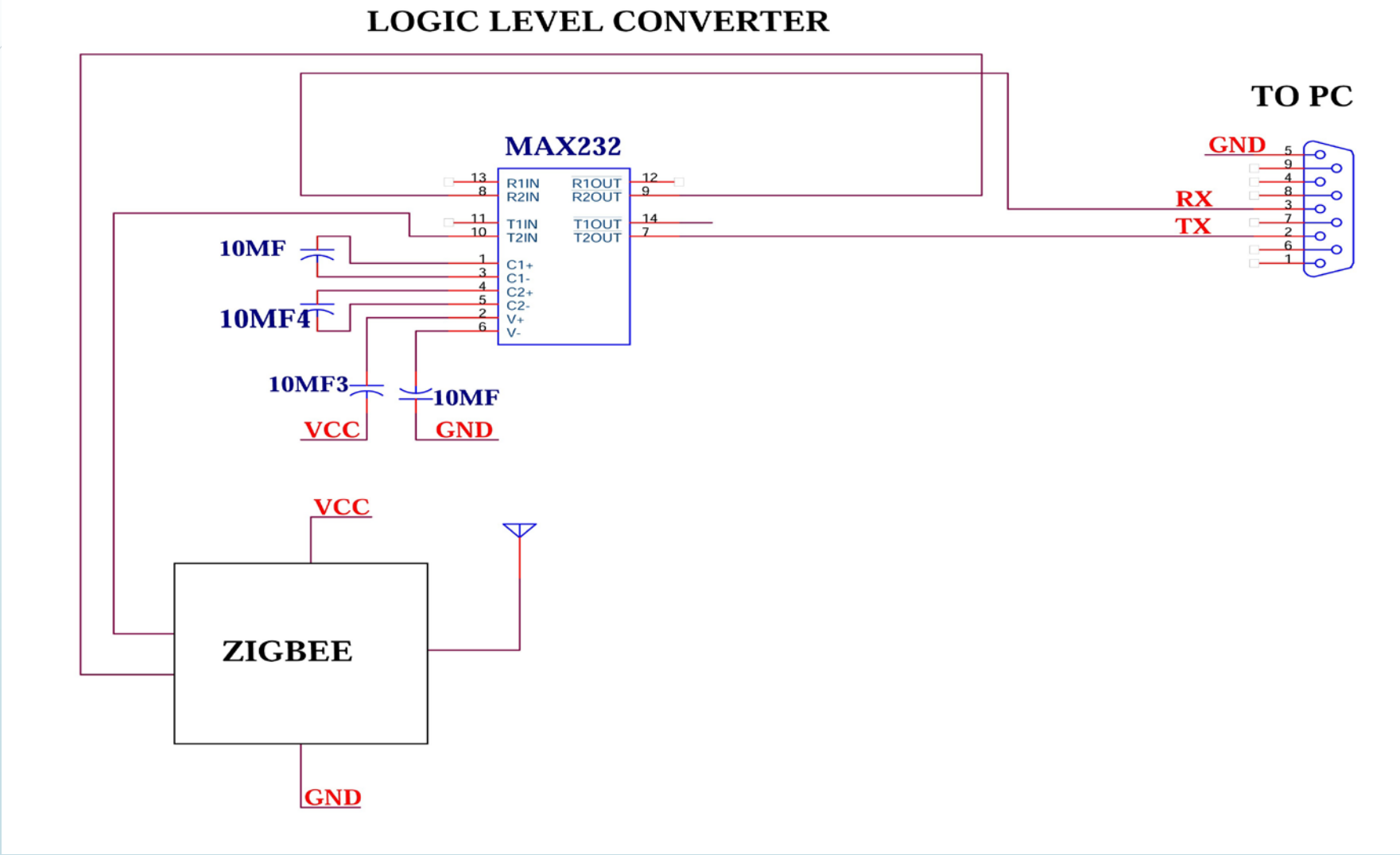
TEMPERATURE MONITOR CIRCUIT



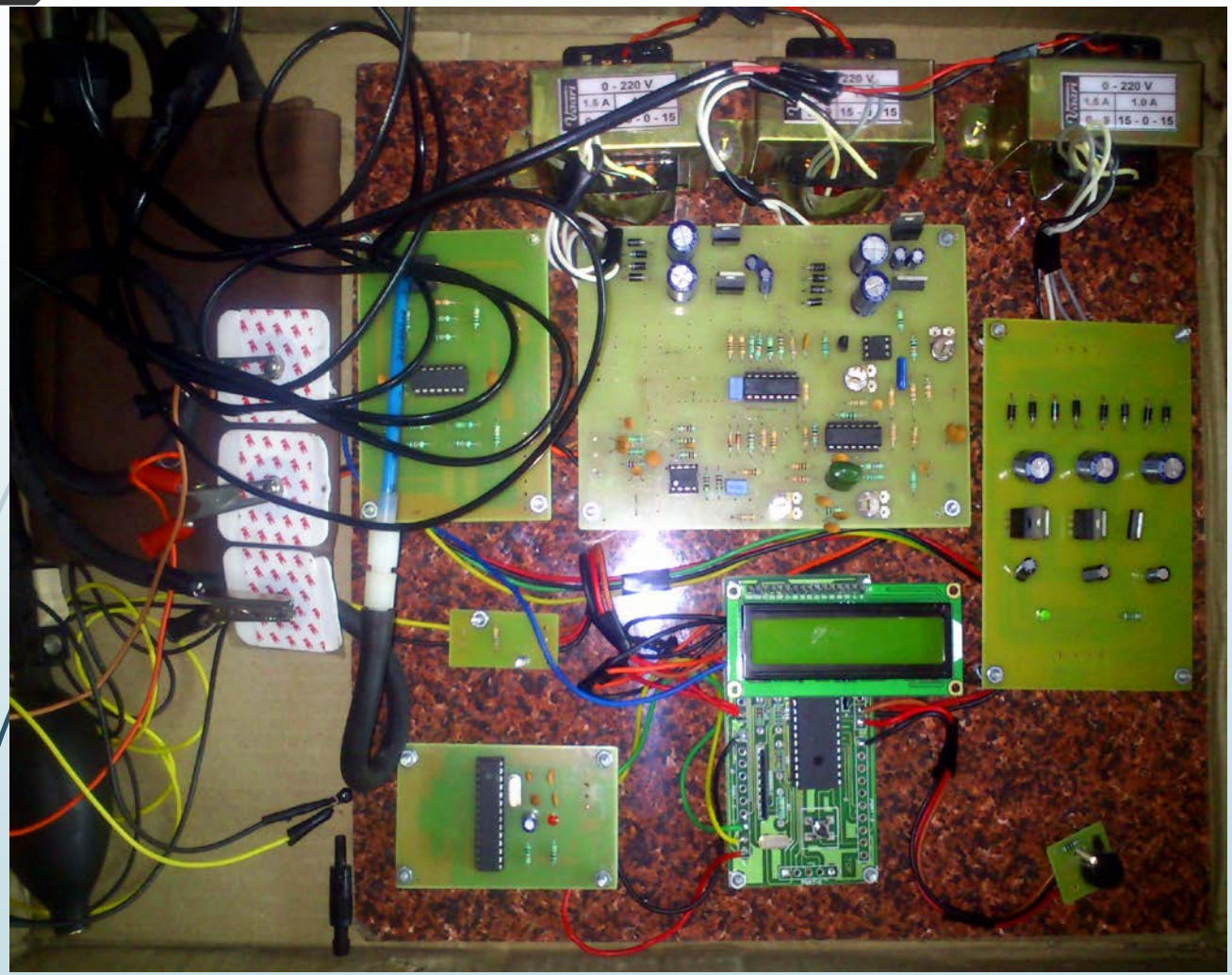
PIC INTERFACE



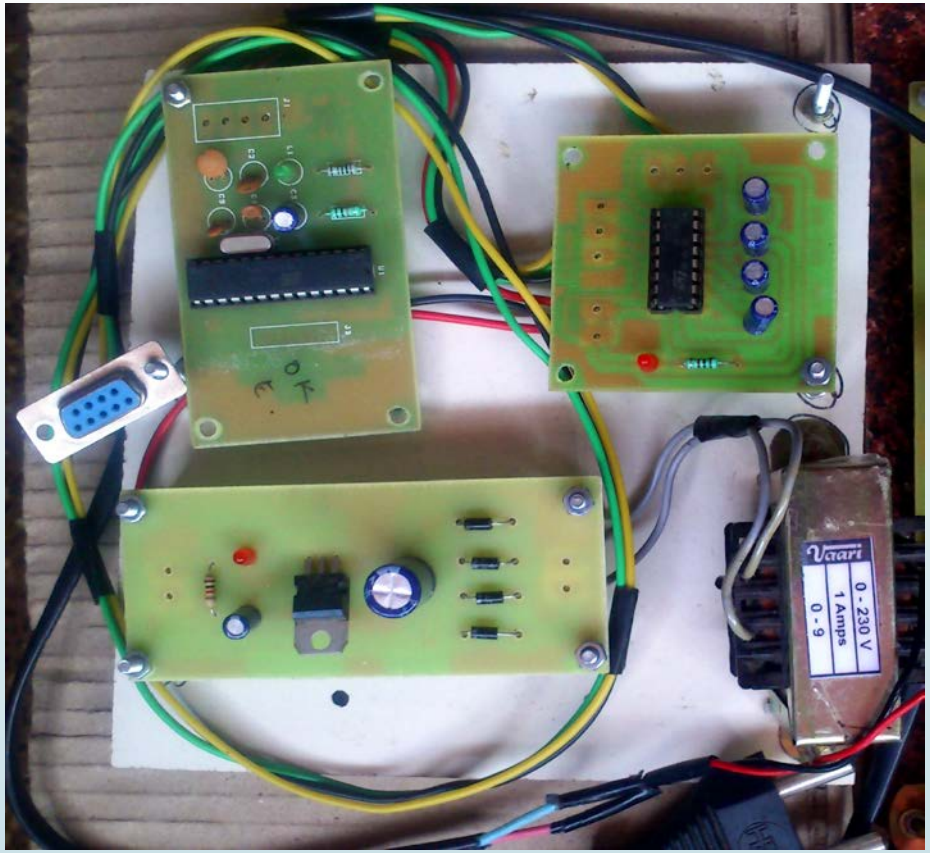
COMPUTER INTERFACE SECTION



HARDWARE

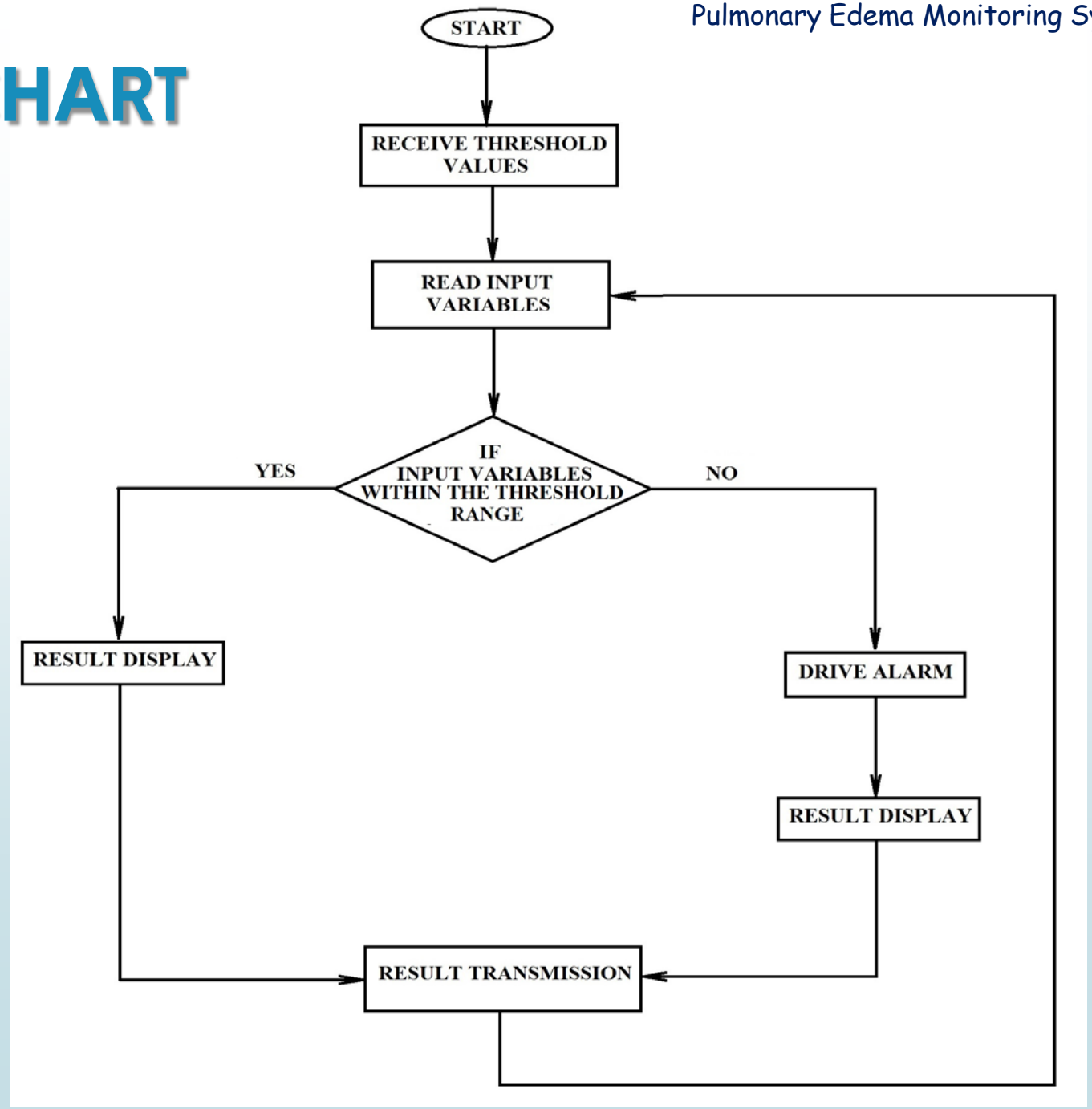


SENSOR INPUT SECTION

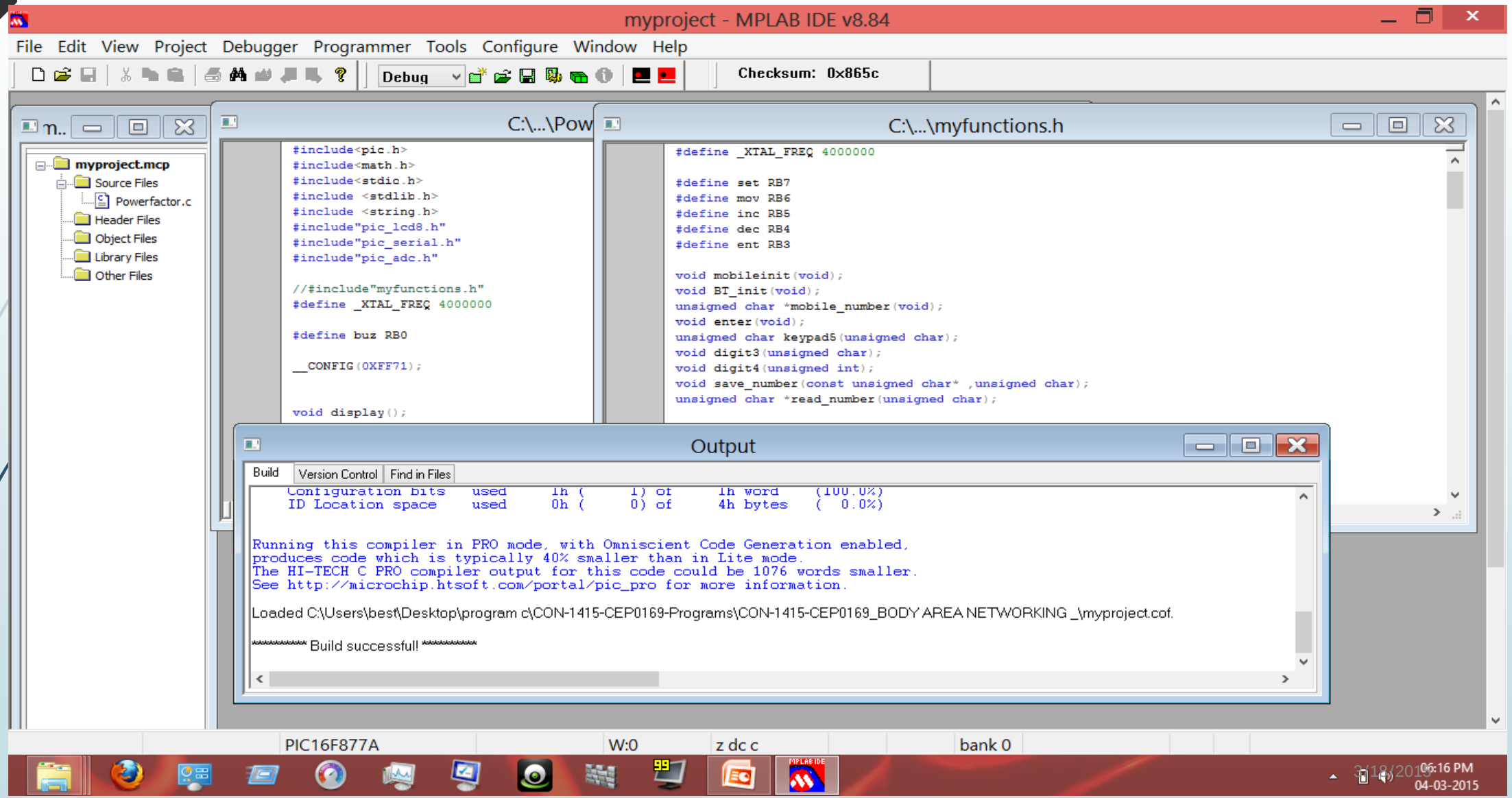


COMPUTER INTERFACE SECTION

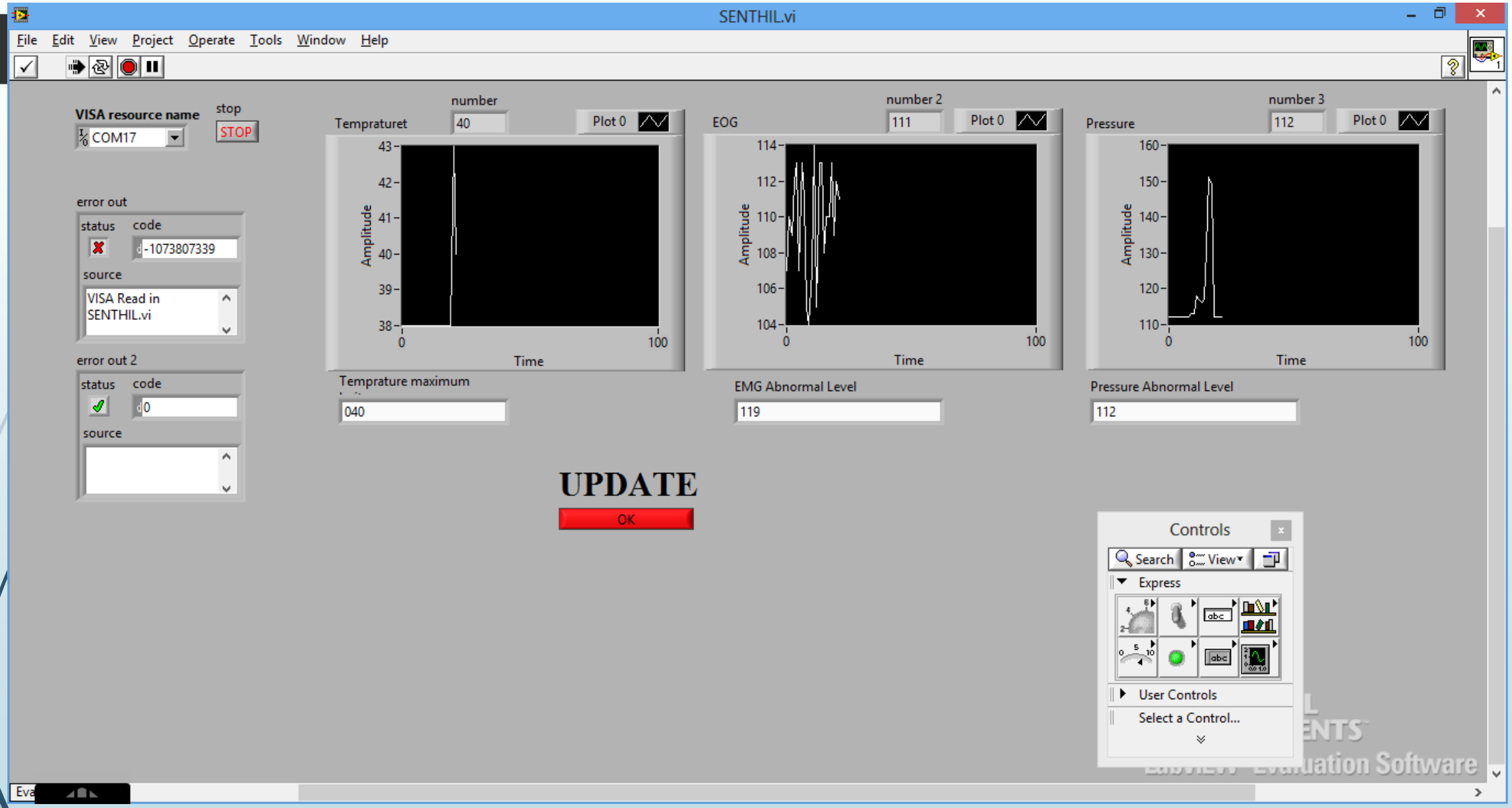
FLOW CHART


START
RECEIVE THRESHOLD VALUES
READ INPUT VARIABLES
IF INPUT VARIABLES WITHIN THE THRESHOLD RANGE
YES
NO
RESULT DISPLAY
DRIVE ALARM
RESULT DISPLAY
RESULT TRANSMISSION

TOOLS USED



MP LAB IDE


SENTHIL.vi
File Edit View Project Operate Tools Window Help
VISA resource name
COM17
stop
STOP
error out
status
code
-1073807339
source
VISA Read in SENTHIL.vi
error out 2
status
code
0
source
number
Tempraturet
40
Plot 0
Amplitude
Time
Temprature maximum
040
number 2
EOG
111
Plot 0
EMG Abnormal Level
119
number 3
Pressure
112
Plot 0
Pressure Abnormal Level
112
UPDATE
OK
Controls
Search
View
Express
User Controls
Select a Control...
Evaluation Software

LAB VIEW

ADVANTAGES

- Continuous monitoring
- Non-invasive system
- Remote monitoring and data transfer
- Applicable on children and elders

APPLICATIONS

- Pulmonary edema detection
- Remote patient diagnosis
- Temperature sensing
- Pressure sensing

CONCLUSION

- Adequate lung monitoring system
- Other body muscles
- Continuous usage

THANK YOU

REFERENCE

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