BODY TEMPERATURE MONITORING USING AN SMS-BASED TELEMEDICINE SYSTEM
HARDWARE COMPONENTS

- Microcontroller
- GSM modems
- MAX 232
- Temperature Sensor
- Liquid crystal display
- ADC
- Power supply
- Keil software
WHY ATMEL 89C51?

- 8 Bit CPU optimized for control applications
- Extensive Boolean processing (Single - bit Logic) Capabilities.
- On - Chip Flash Program Memory
- On - Chip Data RAM
- Bi-directional and Individually Addressable I/O Lines
- Multiple 16-Bit Timer/Counters
- Full Duplex UART
- Multiple Source / Vector / Priority Interrupt Structure
- On - Chip Oscillator and Clock circuitry.
- On - Chip EEPROM
- One Serial communication port
DB-9 PIN CONNECTOR

Pin 1: Data Carrier Detect (DCD) (not used)
Pin 2: Receive Data (RXD)
Pin 3: Transmit Data (TXD)
Pin 4: Data Terminal Ready (DTR) (not used)
Pin 5: Ground
Pin 6: Data Set Ready (DSR) (not used)
Pin 7: Request to Send (RTS)
Pin 8: Clear to Send (CTS)
Pin 9: Ringing Indicator (RI) (not used)
8051 CONNECTION TO RS-232
FUNCTIONAL BLOCK DIAGRAM OF ADC
FEATURES OF ADC 0808

- Easy interface to all micro processors
- Operates ratio Metrically or with 5V DC or analog span adjusted voltage reference.
- No zero or full scale adjust Required.
- 8 Channel Multiplexer with address logic.
- 0v to 5v Input range with single 5v power supply.
- Outputs meet TTL Voltage Level Specification.
INTERFACING OF 0808 ADC TO MICROCONTROLLER
THERMISTOR

- Temperature Sensitive Resistor.
- Negative Temperature Coefficients.
- Manufacture

Schematic Symbol:
A GSM modem can be a PC Card installed in a notebook computer.
General architecture of a GSM network:

- **SIM** (Subscriber Identity Module)
- **ME** (Mobile Equipment)
- **BTS** (Base Transceiver Station)
- **BSC** (Base Station Controller)
- **HLR** (Home Location Register)
- **VLR** (Visitor Location Register)
- **EIR** (Equipment Identity Register)
- **MSC** (Mobile Services Switching Center)
- **AuC** (Authentication Center)

**Network Subsystem**
- **PSTN** (Public Switched Telephone Network)
- **ISDN** (Integrated Services Digital Network)
- **PSPDN** (Public Switched Packet Data Network)
- **CSPDN** (Circuit-Switched Packet Data Network)
LIQUID CRYSTAL DISPLAY

- combine the properties of both liquids and crystals.
- Most common LCD’s connect to the 89C52 are 16x2.
- It consist 3 control lines namely EN, RS and RW.
LCD INTERFACING TO THE MICROCONTROLLER:
Keil software

- Embedded software development
- The µVision Simulator allows to debug programs using PC
APPLICATIONS

- medical
- Heat measurement
CONCLUSION

Enable transmission of Temperature
Utilizing SMS with low cost
Medical attentions
Thank you