SOUND SENSOR INTERFACING WITH LPC2148

ABSTRACT

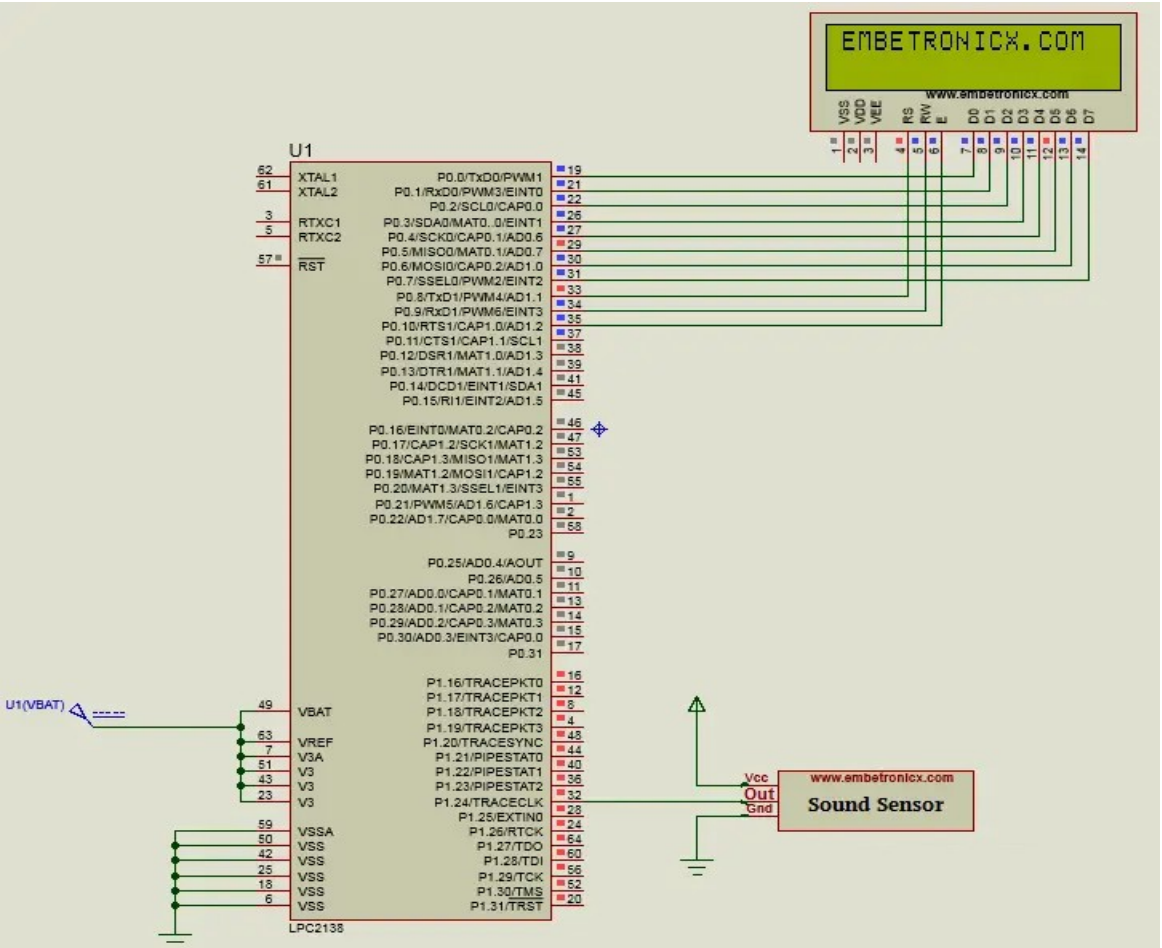
The sound detection sensor module detects whether the sound has exceeded a threshold value. Sound is detected via microphone and fed into an LM393 op-amp. The PCB (printed circuit board) of this electronic circuit has a potentiometer. The sound level setpoint is adjusted via an onboard potentiometer. When the sound level exceeds the setpoint, an LED on the module is illuminated and the output is sent low.

This module is designed for applications where detection of sound levels above a user-defined threshold is crucial. Its flexibility lies in the ability to adjust the threshold easily using the onboard potentiometer, making it suitable for diverse applications such as sound-activated switches or alarms, where responsive reactions to varying sound levels are required.

COMPONENTS REQUIRED

- LPC2148 Development Board
- Sound Sensor
- LCD Module (To print the Sensor output)
- Software Required: Keil IDE

BLOCK DIAGRAM



WORKING PRINCIPLE

- **Understand the Sound Sensor:**
  - Sound sensors produce analogue voltage signals in response to sound.
- **Connect the Sound Sensor to LPC2148:**
  - Connect the sensor's output to an analogue input pin on the LPC2148.
  - Use additional components if necessary (e.g., resistors, operational amplifiers).
- **Configure ADC (Analog-to-Digital Converter):**
  - Set up the LPC2148's ADC module to convert the analogue voltage to a digital value.
- **Read Sensor Data:**
  - Read the digital data from the ADC representing sound intensity.
- **Process and Interpret Data:**
  - Implement algorithms to interpret sound levels or detect patterns.
- **Implement Control Logic:**
  - Based on processed data, implement control logic for system actions.
- **Programming the LPC2148:**
  - Write firmware code in C or assembly using an appropriate IDE.
- **Load Firmware onto LPC2148:**
  - Load compiled firmware onto LPC2148 using a programming tool or method.
- **Test and Debug:**
  - Test the system with the sound sensor in different scenarios.
  - Debug and fine-tune code as needed.
- **Integrate with the Overall System:**
  - Integrate LPC2148 and sound sensor into the overall system design.