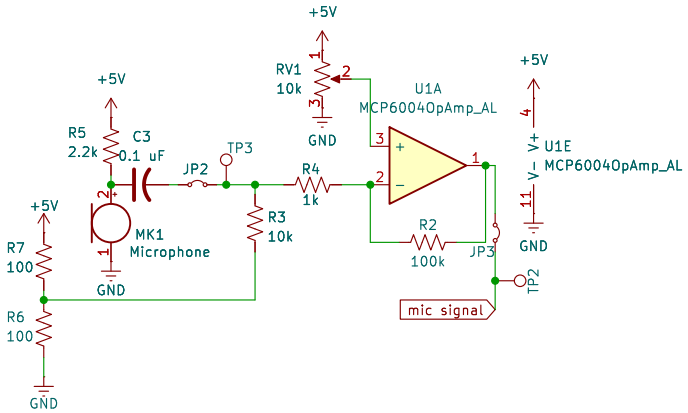
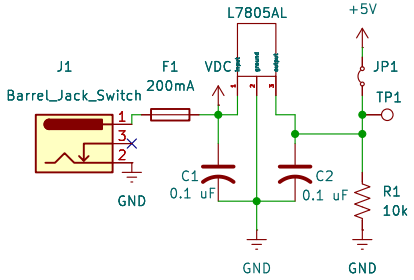
Microphone with amplifier



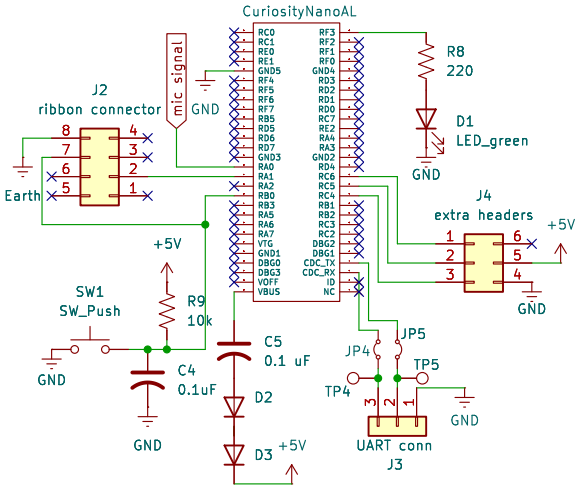
The microphone (MK1) converts sound into a small AC voltage, which is amplified by the op–amp (UA1) and biased via RV1. The amplified output (mic signal) is sent to the microcontroller, which detects when the sound level rises above a set threshold to send a signal to the input/output board.

Power



Power is supplied to the system via a barrel jack and an external power supply. While the system is designed to operate on only 5 volts, more than 5 volts may be supplied by the external power supply. The fuse (F1) and the voltage regulator (L7805AL) ensure that only 5 volts runs through the circuit

Microcontroller



The microcontroller receives the amplified mic signal for processing. A push button (SW1) provides an option for manual control, while an LED serves as a debugger. The UART connector (J3) enables serial communication with other devices. Extra headers are provided in case changes need to be made. Decoupling capacitors (C4, C5) stabilize the 5 V supply, and diodes (D2, D3) provide voltage protection.

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Size: A4	Date: 2025–10–30	**Rev: 1**
KiCad E.D.A. 9.0.4		Id: 1/1