Smart Water Level Monitoring System – Hardware Connections

Project Overview

The Smart Water Level Monitoring System is an IoT-based project designed to simulate and monitor water levels using a potentiometer, LCD display, RGB LED, and an Arduino board. This project helps in understanding the integration of sensors and output modules for real-time monitoring.

1. Potentiometer (Simulating Water Level)

Pin	Connect To
Left	GND
Right	5V
Middle	A0

The potentiometer is used to simulate varying water levels by rotating the knob, which varies the voltage sent to pin A0.

2. LCD 16x2 (4-bit mode, 16-pin)

LCD Pin	Function	Connect To
GND	Ground	GND
VCC	Power	5V
VO	Contrast	Potentiometer (middle pin)
RS	Register Select	D12
RW	Read/Write	GND
E	Enable	D11
DB0–DB3	Not used	Leave unconnected
DB4	Data bit 4	D7
DB5	Data bit 5	D6
DB6	Data bit 6	D5
DB7	Data bit 7	D4
LED+	Backlight +	5V (via 220Ω)
LED−	Backlight −	GND

This table outlines the 16x2 LCD's 4-bit mode configuration, used to display the simulated water levels.

3. RGB LED (Common Cathode)

RGB Pin	Arduino Pin	Note
Red	D6	via 220Ω resistor
Green	D5	via 220Ω resistor
Blue	D4	via 220Ω resistor
Common	GND	

The RGB LED uses a common cathode configuration. Each color is controlled via Arduino digital pins using 220Ω resistors.