

MINI SMART RELAY

AN EXTENSION OF ELEVATE HOMES

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1. Abstract

The Mini Smart Relay is a single-channel relay system that seamlessly integrates with Wi-Fi, allowing users to control it either via a physical input switch or through a mobile application. The relay retains its last known state even in the absence of Wi-Fi and includes an indicator for monitoring Wi-Fi signal strength, aiding in easy debugging. Designed to handle devices up to 5A at 230V AC, it ensures reliable operation. A simple setup process enables users to press the setup button, connect to the embedded server, and configure credentials via a web interface. The system leverages InfluxDB for data management, eliminating the need for a dedicated server. HTTP requests facilitate state retrieval and updates, with each relay uniquely identified by its MAC address. This approach allows new users to create a data bucket upon device setup and manage relay states dynamically through the same bucket. The relay communicates using the Line Protocol, embedding the MAC address to ensure seamless identification and differentiation among multiple devices.

1.1 Abstract Block Diagram / Functionality Diagram

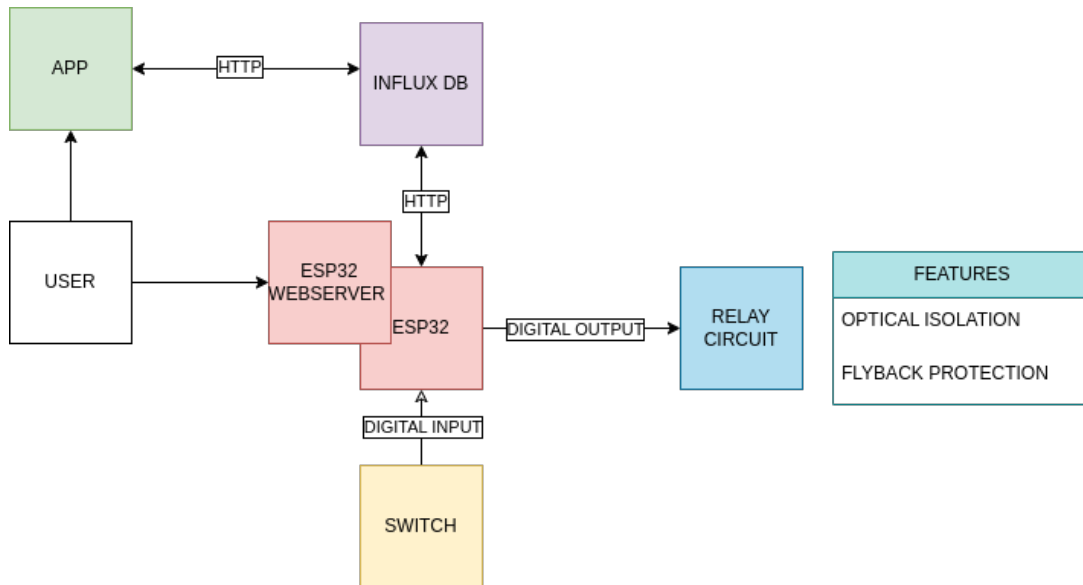


Figure 1: Abstract Block Diagram

2.1 Schematic

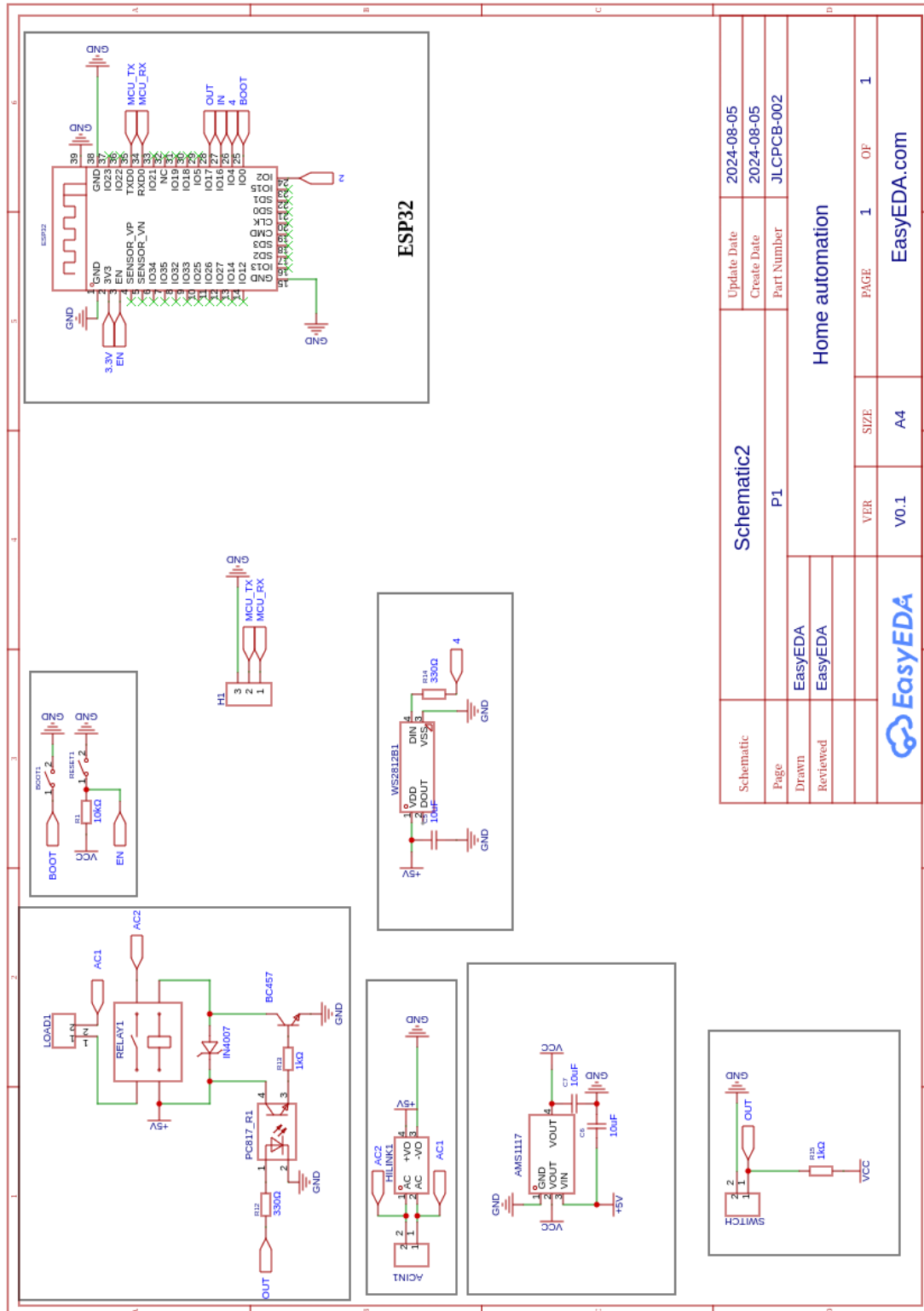


Figure 2: Hardware Schematic

2.2 Hardware Block Diagram

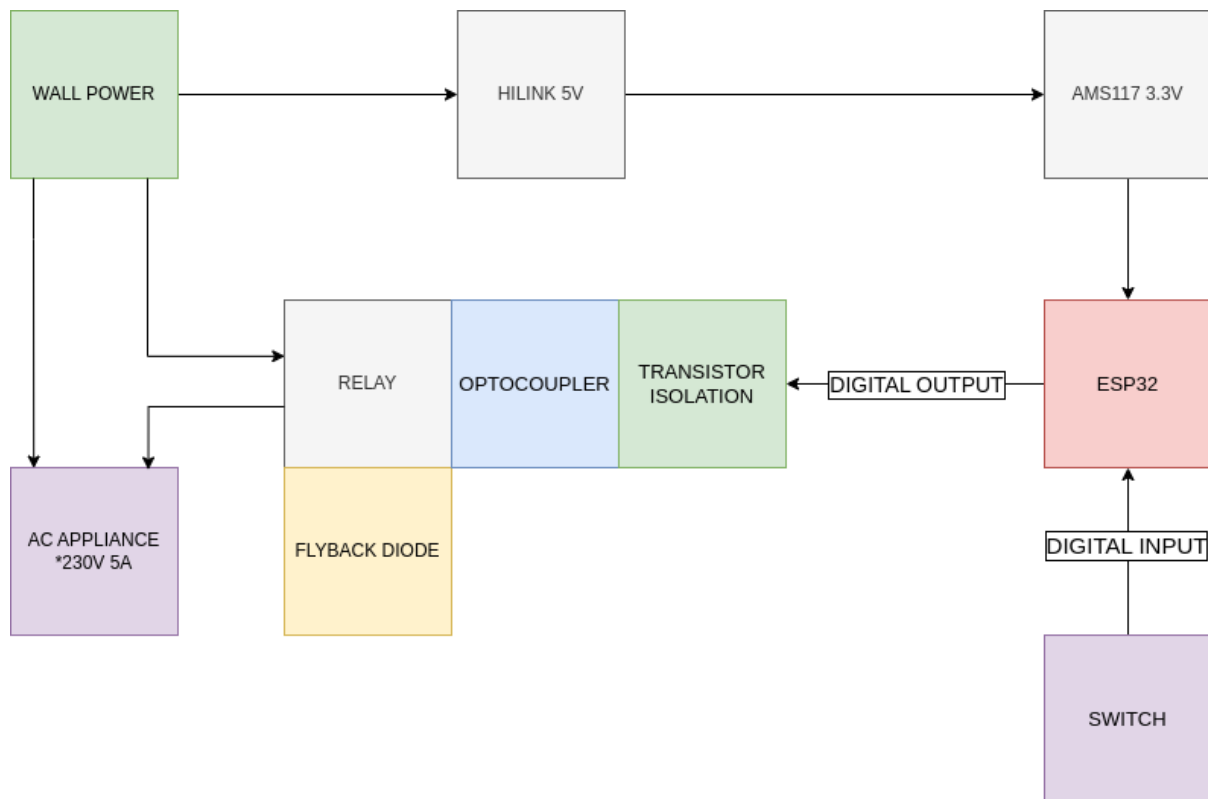


Figure 3: Hardware Block Diagram

2.3 PCB

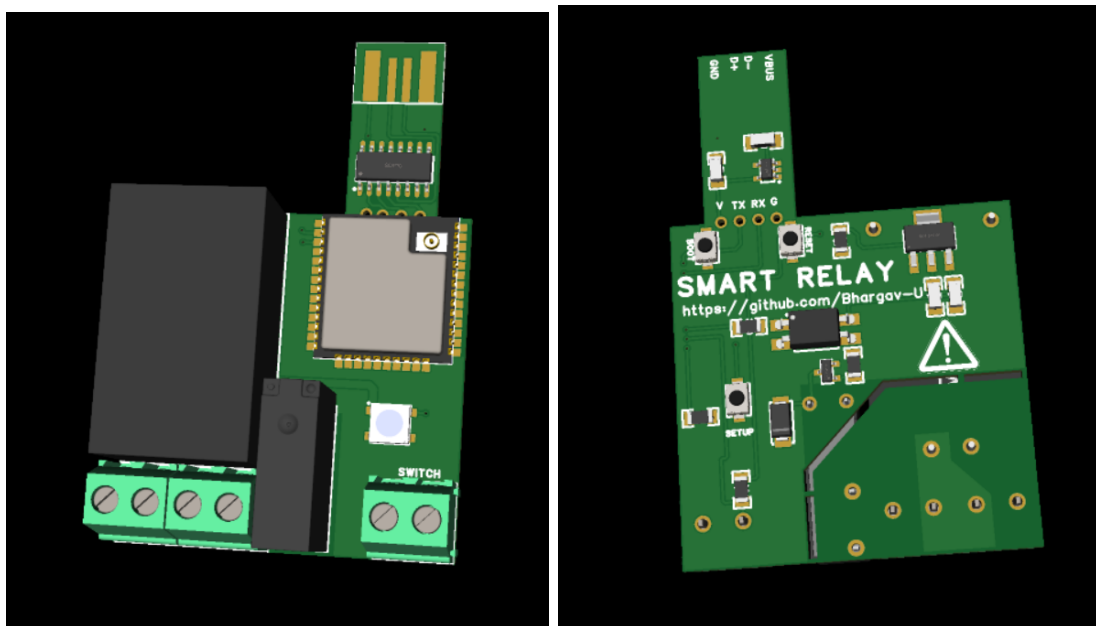


Figure 4: PCB Layout

3. Software

3.1 Software Block Diagram

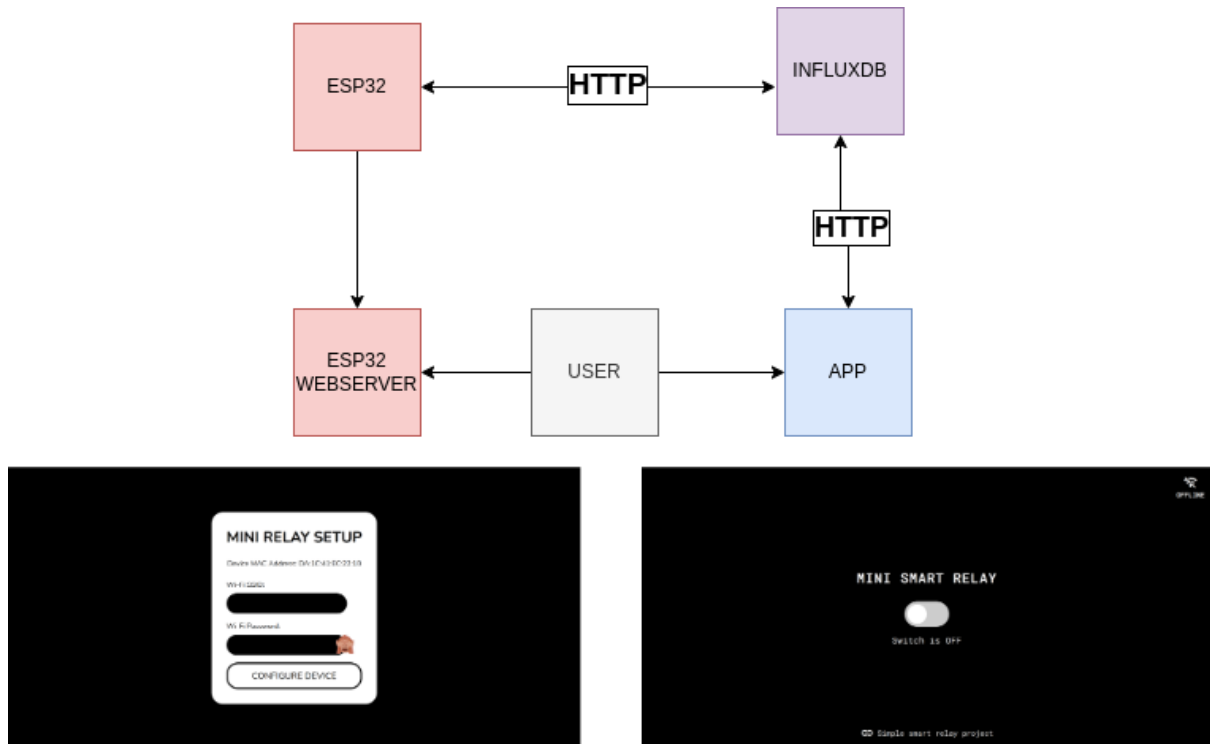


Figure 5: Software Block Diagram

3.2 Firmware Pseudo Code Block Diagram

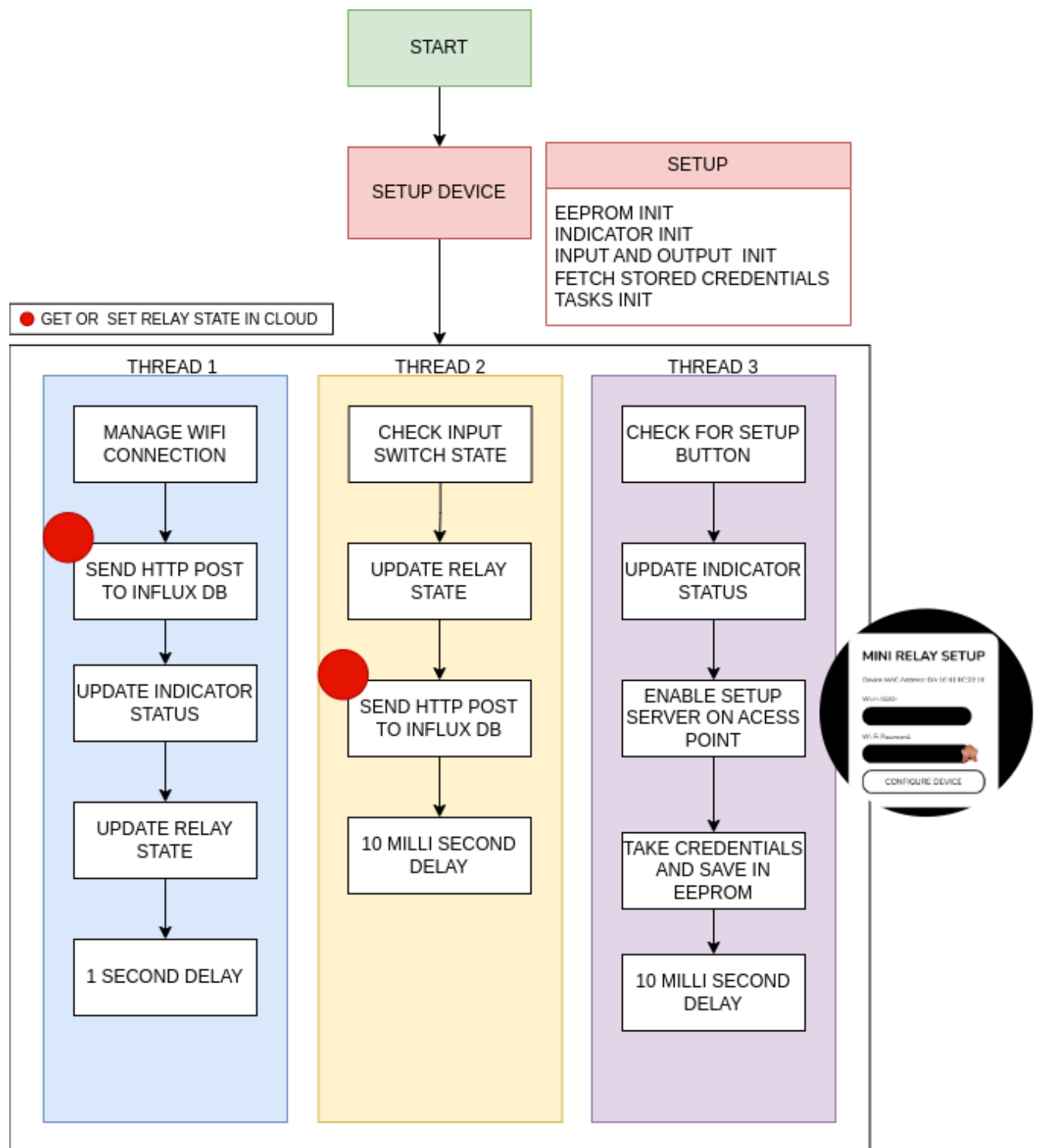


Figure 6: Firmware Pseudo Code Block Diagram

3.3 Application Images

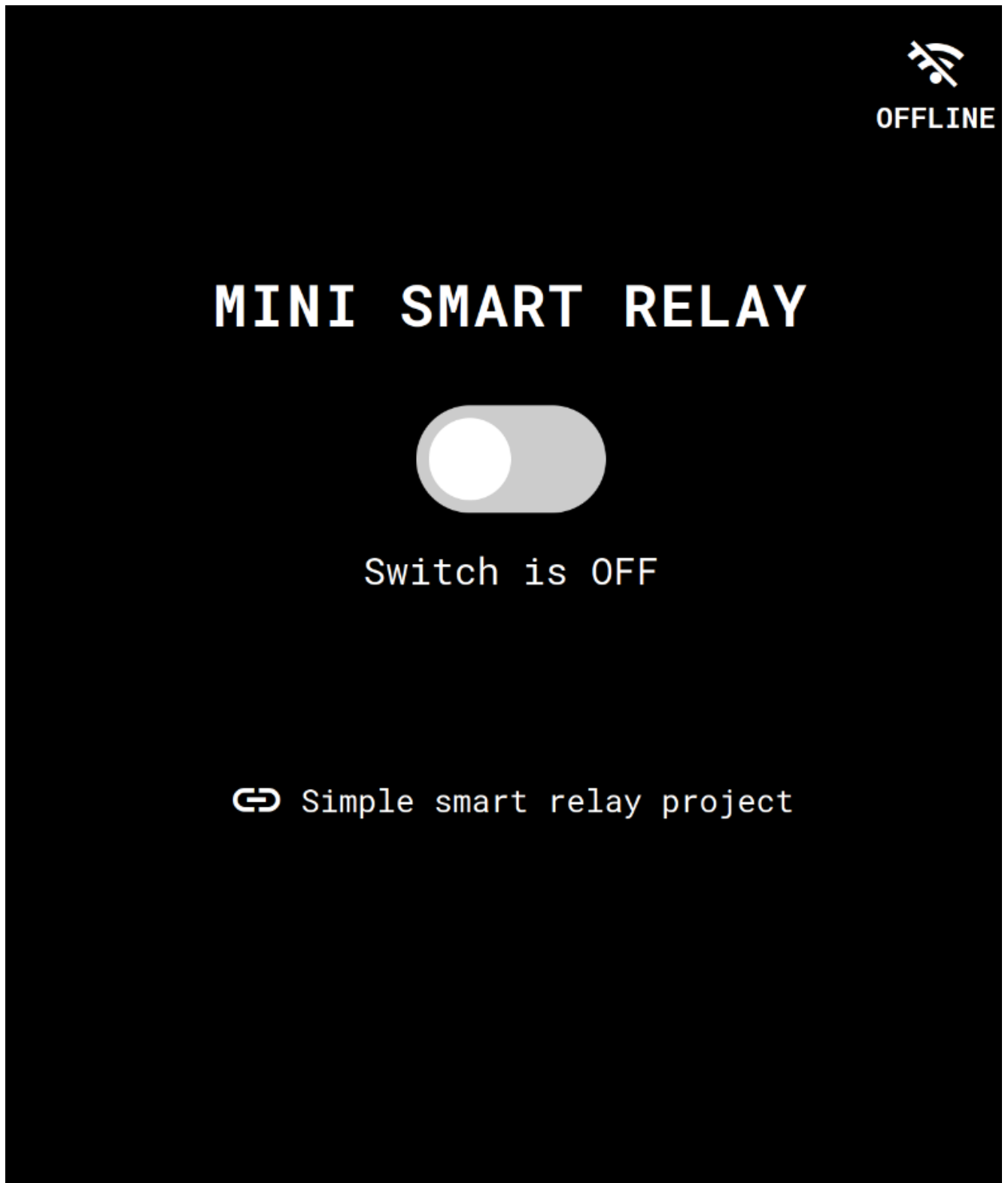


Figure 7: Application Interface

3.4 Application Block Diagram



Figure 8: Application Block Diagram