

# S.H.I.E.L.D. Flood Safety System

## Sensors

HC-SR04 Ultrasonic: TRIG → GPIO5 ECHO → GPIO18 (Level Shift)

Float Switch → GPIO33 (Active-Low)

## ESP32 Dev Module

Local Logic:

- Calibration
- Persistence Timers
- Predictive Trend
- Alert Thresholds

## Outputs

### Local-Only Core

Relay Module CH1 → GPIO25  
CH2 → GPIO26  
CH3 → GPIO32

Buzzer → GPIO23

Manual Reset Button → GPIO27

Status LEDs L1 → GPIO14  
L2 → GPIO16  
L3 → GPIO17

### Local-Only Core

## Optional Internet

Weather API  
(OpenWeather)

HTTPS

Local Web Dashboard  
*shield.local*

HTTPS

SMS Gateway  
Android Phone  
(send-sms)

Tide Data API  
(Stormglass)

## Legend

→ Sensor Input

→ Control Output

---> Network