Pylae – Unmanned Door System

Badge Reader per Door – Scalable Architecture

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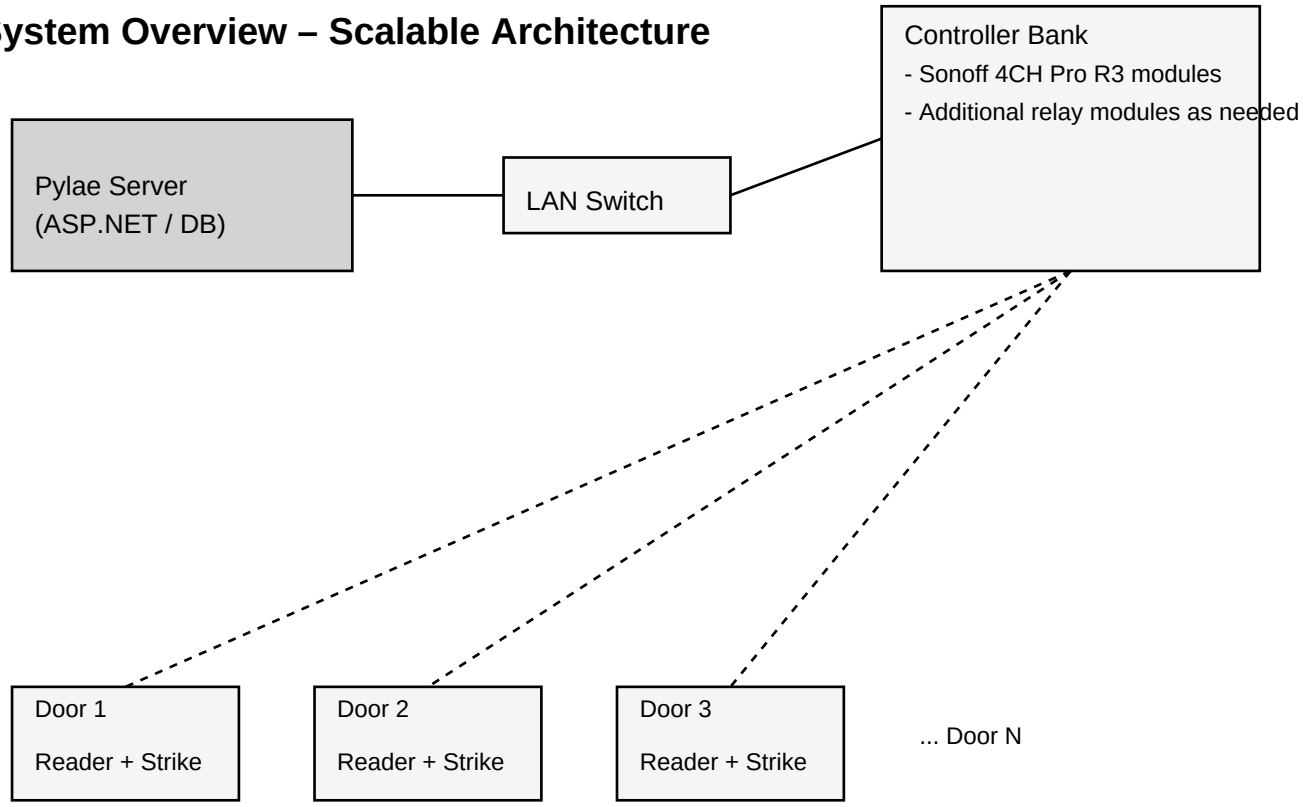
This document shows the wiring and system architecture for retrofitting existing doors with fail-secure electric strik

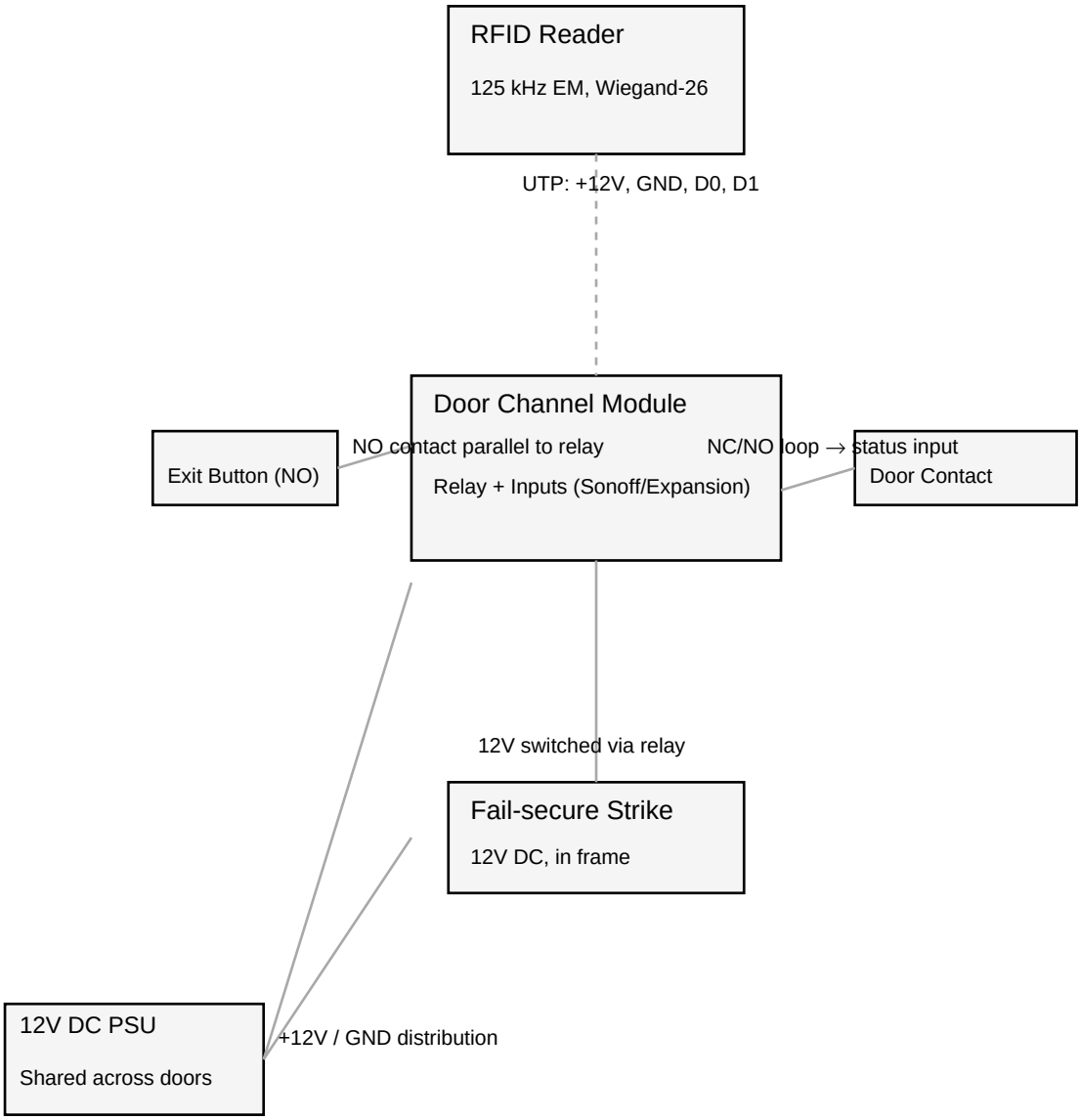
The design is modular and supports an arbitrary number of doors: you repeat the per-door wiring pattern and add

1. System Overview – Scalable Architecture



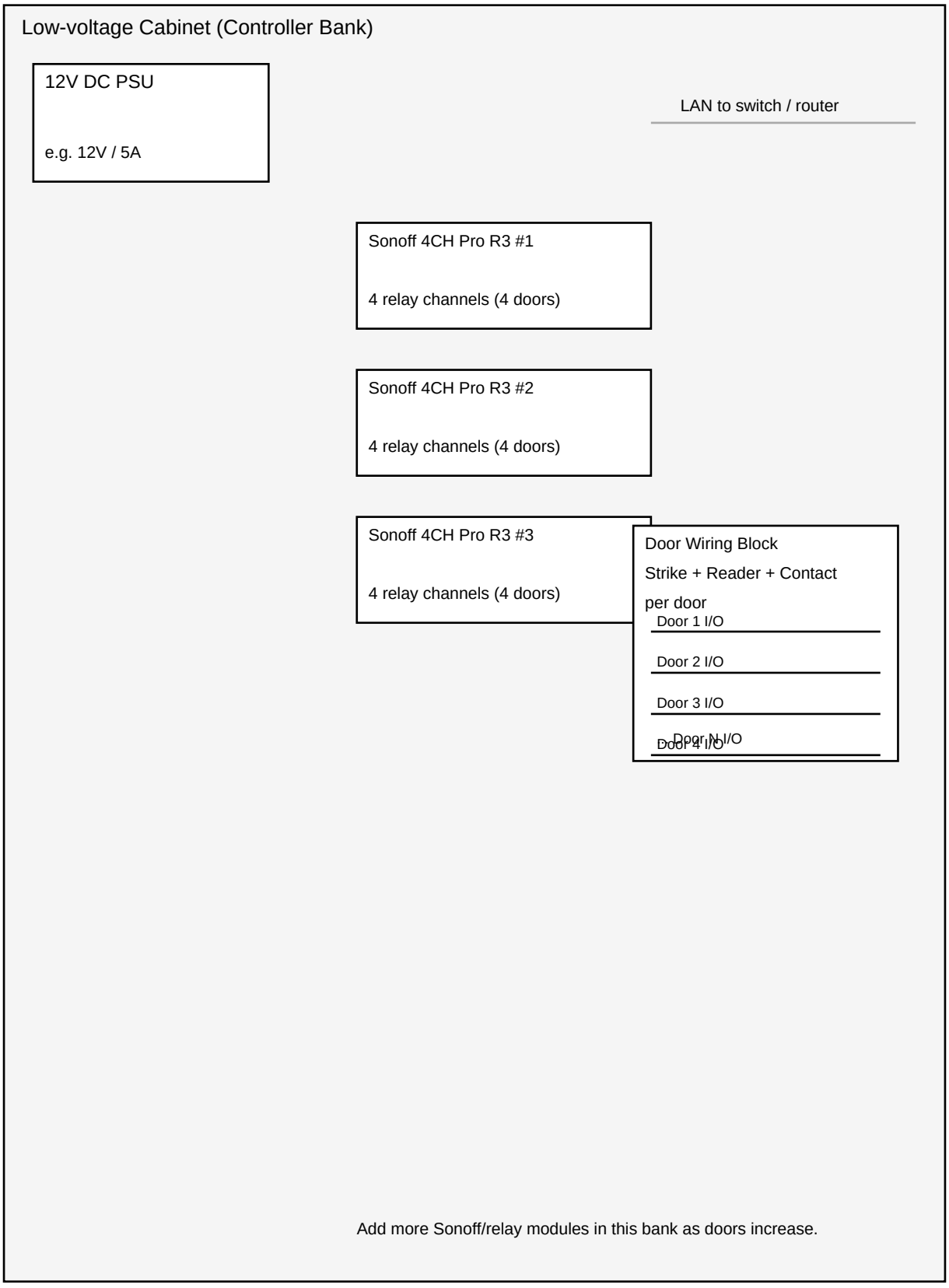
Legend:
• Pylae communicates over TCP/IP with Sonoff/relay modules.
• Each relay channel controls one electric strike (one door).
• Each door has its own badge reader, exit button and optional door contact.
• To add more doors, you add more controller modules and repeat the door wiring pattern.

2. Per-Door Wiring Diagram (Fail-Secure Strike)



Notes:
• Fail-secure strike: door stays locked if power fails; key cylinder always works.
• Reader provides badge ID; controller decides allow/deny and pulses relay.
• Exit button gives local egress independent of network.
• Door contact allows 'door held open' and 'door forced open' events.

3. Controller Panel – Scaling to N Doors



Scaling rules:
• Each Sonoff 4CH Pro R3 provides 4 relay outputs → typically 4 doors.
• Add more Sonoff or other relay modules in the same cabinet as door count grows.
• The PSU must be sized for the total current of all strikes + readers.
• All field cables (to doors) land on the terminal block for neatness and serviceability.

4. Reader Pinout & Bill of Materials

125 kHz EM RFID Reader – Typical Wiegand-26 Pinout

Red: +12V DC power

Black: GND

Green: D0 (Wiegand Data 0)

White: D1 (Wiegand Data 1)

Yellow: LED control (optional)

Blue: Buzzer control (optional)

Bill of Materials (Per Door – Indicative)

- Fail-secure electric strike (12V DC, frame-mounted).
- 125 kHz EM RFID reader with Wiegand-26 output (IP65 if external).
- Exit button (NO contact) for interior egress.
- Door contact (magnetic reed switch) for status.
- UTP Cat5e/6 for reader + contact; 2×0.75 mm² for strike power.
- Junction box / surface box near door for terminations.

Shared per controller bank:

- 12V DC PSU sized for strikes + readers (e.g. 12V/5A, 12V/10A).
- One or more Sonoff 4CH Pro R3 modules (or equivalent relay boards).
- Low-voltage cabinet/enclosure, DIN rail, terminal blocks.

Note: For exact Greek-market parts and prices, refer to the separate BOM document you already downloaded.