Door Access System Raspberry Pi + PN532 + Relay + 12 V Electric Strike

# Fail Secure – Energize to UNLOCK (use NO)

## Legend – Connections

* Pi -> Relay: GPIO17 -> IN, 5V -> VCC, GND -> GND
* Pi <-> PN532: SDA(GPIO2) <-> SDA, SCL(GPIO3) <-> SCL, +3.3V <-> VCC, GND <-> GND
* Power path(Fail-secure): +12V from PSU -> COM; NO -> Strike +; Strike - -> PSU –
* Behavior:
  + - * Energize relay -> door UNLOCKS;
      * Power loss -> door LOCKED

**5 V Relay Module (1-CH)**

* Control: VCC, GND, IN
* Contacts: COM, NO, NC

**Raspberry Pi (3.3 V GPIO)**

* GPIO17 -> Relay IN
* 5V & GND -> Relay VCC/GND

**PN532 NFC (I2C)**

* VCC 3.3v, GND, SDA(GPIO2), SCL(GPIO3)

**12V DC Power Supply**

+ 12V, - (GND)

**12V Electric Strike**

* Type: FAIL-SECURE
* Polarity: +(anode), -(cathode)
* Add flyback diode(stripe to +)

# Fail Safe – Power to LOCK(use NC)

## Legend – Connections

* Power Path (Fail Safe): +12V from PSU -> COM; NC -> Strike +; Strike - -> PSU –
* Behavior:
  + - * Not energized -> door LOCKED
      * Energize relay -> door UNLOCKS;
      * Power loss -> door UNLOCKED(egress safe)
* Keep Pi/ PN532 control wiring separate from 12V Strike wiring

**12V DC Power Supply**

+ 12V, - (GND)

**5 V Relay Module (1-CH)**

* Control: VCC, GND, IN
* Contacts: COM, NO, NC

**12V Fail-Safe Electric Strike**

Type: FAIL-SAFE

Polarity: +(anode), -(cathode)

Add flyback diode (stripe to +)

# PN532 Raspberry Pi(I2C) Pin Map

|  |  |  |  |
| --- | --- | --- | --- |
| PN532(I2C) | Raspberry Pi | Pi Physical Pin | Notes |
| VCC(3.3V) | 3.3V | Pin1 | Power PN532 at 3.3V |
| GND | GND | Pin 6 |  |
| SDA | GPIO2 | Pin 3 | Enable I2C on Pi |
| SCL | GPIO3 | Pin 5 |  |
| RST(optional) | GPIO25 | Pin 22 | Used by some libraries |
| IRQ(optional) | GPIO24 | Pin 18 | Optional interrupt |

# Relay Module Raspberry Pi Control Wiring

|  |  |  |  |
| --- | --- | --- | --- |
| Relay Module | Connects To | Terminal | Notes |
| VCC | Pi 5V |  | Power for relay board |
| GND | Pi GND |  | Common ground with Pi |
| IN | GPIO17 |  | Often active LOW |

# EU / Romania Mains(230V/50Hz) -> 12V PSU

## Legend – Safety & Wiring Notes

* L: Outlet -> Fuse -> PSU L
* N: Outlet -> PSU N
* PE: Outlet -> PSU PE
* PSU provides internal isolation – use ONLY the 12V DC output to feed the relay/strike system
* Keep AC and DC wiring physically separated; and strain relief on mains entries
* Relay module switches only the 12V DC to the strike – NEVER route mains through the relay module
* Use CE-marked enclosed PSUs; bond any metal enclosure to PE. Work on mains only if qualified