Hardware Setup Guide

Required Components

Core Hardware

- Raspberry Pi 4 (4GB RAM minimum)
- 32GB microSD card (Class 10)
- NFC reader module (PN532 or RC522)
- GPS module (NEO-8M)
- 4G/LTE modem (optional for remote locations)

Enclosure & Power

- Weatherproof enclosure (IP65 rated)
- 12V power adapter or solar panel kit
- Ethernet cable (Cat6)
- Mounting hardware

Assembly Instructions

1. Prepare Raspberry Pi

```
# Flash Raspberry Pi OS
sudo dd if=raspios-lite.img of=/dev/sdX bs=4M status=progress

# Enable SSH and I2C
sudo raspi-config
```

2. Connect NFC Module

- VCC → 3.3V (Pin 1)
- GND → Ground (Pin 6)
- SDA → GPIO 2 (Pin 3)
- SCL → GPIO 3 (Pin 5)

3. Connect GPS Module

- VCC → 5V (Pin 2)
- GND → Ground (Pin 14)
- TX → GPIO 14 (Pin 8)
- RX → GPIO 15 (Pin 10)

4. Install in Enclosure

1. Mount Pi on DIN rail

2. Secure antenna connections
3. Route power and ethernet cables
4. Seal all entry points

Deployment Locations

Site Requirements

- Stable internet connection (Ethernet preferred)
- Power source (110V/220V or solar)
- Public accessibility
- Weather protection
- Secure mounting point

Installation Steps

1. Survey location and obtain permits
2. Install mounting bracket
3. Connect power and network
4. Configure node settings
5. Test all functions
6. Register with network

Testing Checklist

- [ ] Power LED indicator
- [ ] Network connectivity
- [ ] NFC reader detection
- [ ] GPS signal acquisition
- [ ] Solana RPC connection
- [ ] Check-in transaction test