

LightFusion: Aviary Lighting Control System

Professional User Manual

Version 1.0

Document Date: 07/01/2025

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Support: support@aviaryneeds1.com

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1. Introduction

Welcome to the LightFusion Aviary Lighting Control System - the professional solution for optimizing your birds' breeding environment through precise lighting management.

1.1 Product Overview

The Light Fusion Aviary Lighting Control System is designed to gradually adjust daylight hours to simulate natural seasonal changes, promoting healthy breeding cycles in captive birds. This automated system allows you to:

- Control sunrise and sunset times with precision
- Gradually adjust daylight hours over customizable periods
- Monitor and track lighting schedules automatically
- Integrate with smart bulbs and plugs for seamless operation
- Access professional-grade controls through an intuitive dashboard

1.2 Key Benefits

- Optimize Breeding Cycles: Simulate natural photoperiod changes
- Automated Operation: Set schedules and let the system manage timing
- Professional Monitoring: Track progress with detailed status reports
- Flexible Integration: Works with popular smart lighting devices
- User-Friendly Interface: Intuitive dashboard for all skill levels

2. Safety Information

IMPORTANT SAFETY WARNINGS

READ ALL SAFETY INFORMATION BEFORE INSTALLATION AND USE

2.1 Electrical Safety

-  Ensure all electrical connections are made by qualified personnel
-  Verify voltage compatibility before connecting devices
-  Use only recommended smart bulbs and plugs
-  Install proper GFCI protection in wet environments
-  Disconnect power before making any electrical connections

2.2 Animal Safety

-  Monitor birds closely during initial setup and schedule changes
-  Ensure lighting levels are appropriate for your bird species
-  Consult with an avian veterinarian before implementing new lighting schedules
-  Provide escape areas from direct lighting if needed

2.3 Device Safety

-  Keep the control device in a dry, ventilated location
-  Use surge protection for all electronic components
-  Regular backup of system configuration is recommended

3. Package Contents

3.1 What's Included

Please verify that your package contains all of the following items:

- [] Control Hub: Pre-configured LightFusion device
- [] Power Supply: Universal power adapter
- [] Installation Hardware: Mounting brackets and screws
- [] User Manual: This comprehensive guide

3.2 Additional Requirements

- [] Compatible smart bulbs (recommended models listed in Section 4.1)
 - [] Compatible smart plugs (recommended models listed in Section 4.1)
-

4. System Requirements

4.1 Compatible Smart Devices

Recommended Smart Bulbs:

- Shelly Bulbs
- TP-Link Kasa Smart Bulbs

Recommended Smart Plugs:

- Shelly Plug S
- TP-Link Kasa Smart Plugs

4.2 Environmental Requirements

- Operating Temperature: 32°F to 95°F (0°C to 35°C)
 - Humidity: 20% to 80% non-condensing
 - Ventilation: Adequate airflow around control hub
-

5. Installation Guide

5.1 Planning Your Installation

Before beginning installation, plan your lighting layout:

1. Identify Lighting Zones: Determine areas requiring different lighting schedules
2. Device Placement: Plan locations for smart bulbs and plugs
3. Control Hub Location: Choose a central, accessible location

5.2 Hardware Installation

Step 1: Install Smart Devices

1. Install smart bulbs in existing light fixtures
2. Connect smart plugs to power outlets
3. Ensure all devices are powered and accessible

Step 2: Position Control Hub

1. Mount the control hub in a dry, ventilated location
2. Connect the power supply

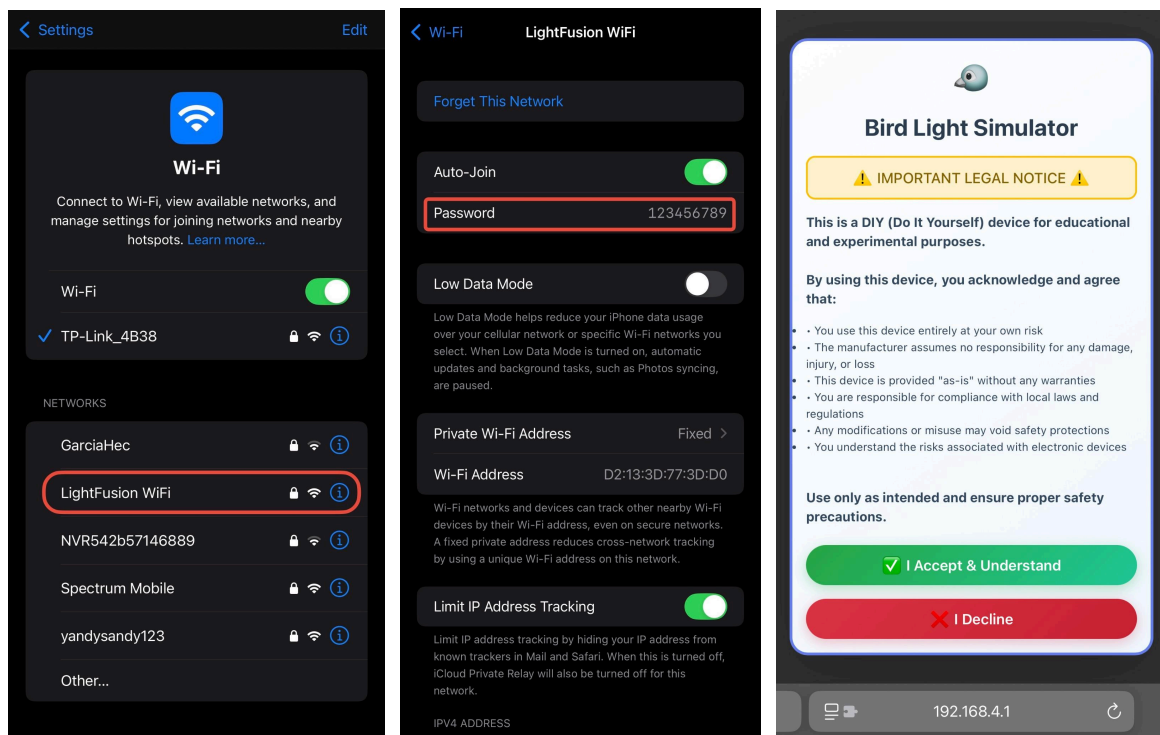
5.3 Device Discovery

The system will automatically discover pre-paired smart devices on the network. This process may take 2-5 minutes.

6. Initial Setup

6.1 Accessing the System

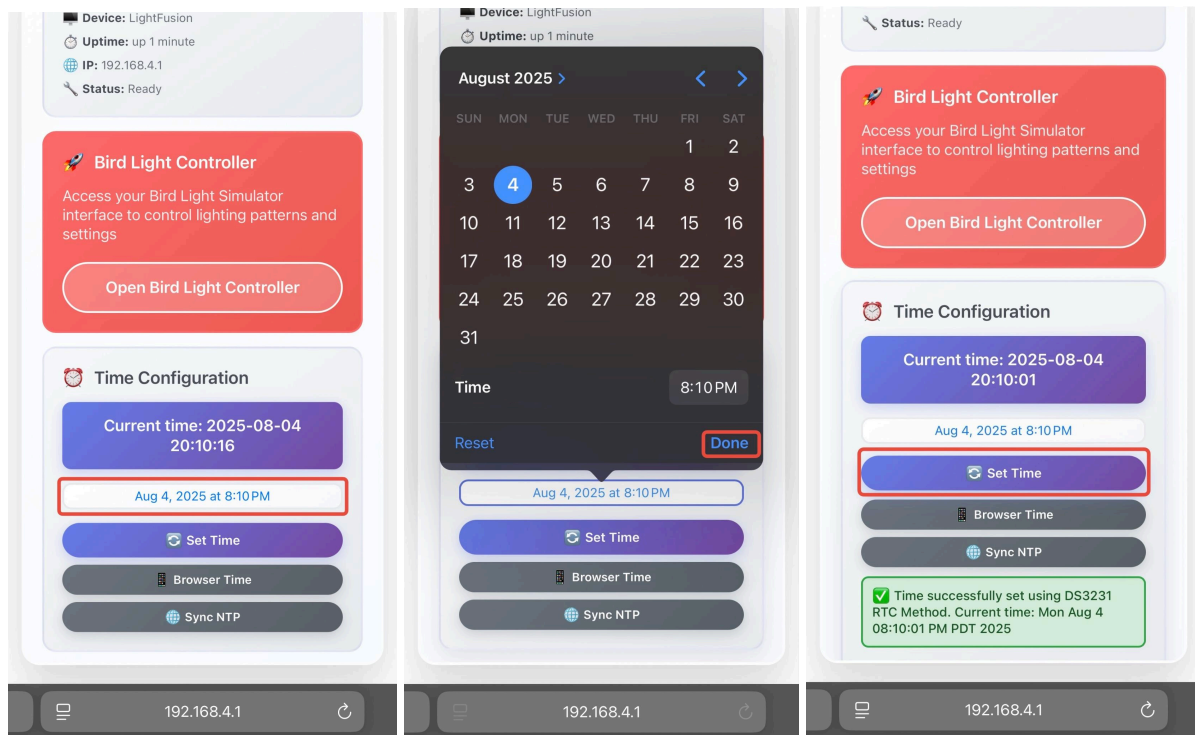
1. Find Your Device WiFi:
 - Use your phone to search for the device WiFi under the name: **LightFusion WiFi**
 - Connect to the WiFi using the following **password: 123456789**
2. Open Web Browser:
 - Navigate to `http://192.168.4.1`
3. Accept The Policy:
 - Accept the regulation policy to access the dashboard
 - Set the system time based on you location/timezone
 - Access the dashboard



6.2 Set the Device Time

After navigating to 192.168.4.1, and accepting the policy, you will be redirected to the page where you can set up the device time and data. Follow the instruction below:

1. Click on the date and time box
2. Select time and date based on your current location then click done
3. Click on Set Time button then wait 3-5 seconds, device will successful time set
4. Click on Open Bird Light Controller to access the main dashboard

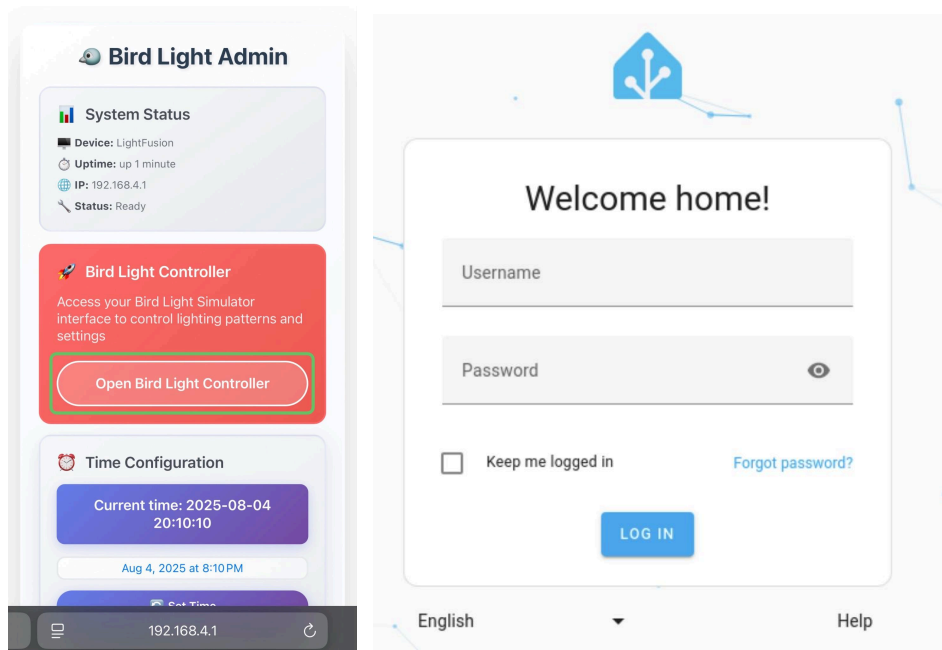


6. Dashboard Overview

6.2 Dashboard Sections

To access the light controls dashboard, follow these steps:

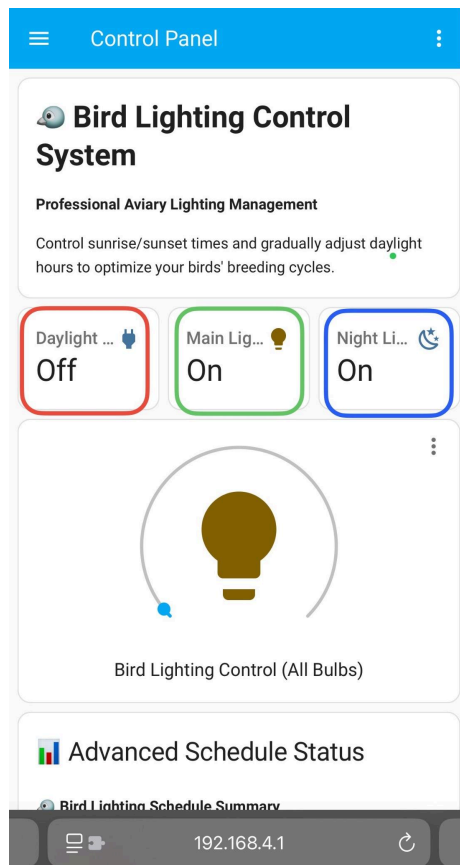
4. Open Web Browser:
 - Navigate to <http://192.168.4.1>
5. Accept The Policy:
 - Accept the regulation policy to access the dashboard
6. Click on Open Bird Light Controller
7. A new page will ask for credentials, use the keyboard and the following credentials:
 - Username: bird
 - Password: 123456789



The professional dashboard is organized into several key sections:

Main Controls

- Daylight Plugs: Control all plug-connected devices (Red box)
- Main Lights: Control all smart bulbs (Green box)
- Night Light Mode: Enable/disable night lighting (Blue box)



17 Schedule Configuration

- **Time Settings:** Set starting sunrise and sunset times
- **Adjustment Mode:**
 - Fixed Sunrise: fix sunrise and only adjust sunset time automatically
 - Fixed Sunset: fix sunset and only adjust sunrise time automatically
 - Balanced: adjust both sunrise and sunset times automatically
- **Target Daylight Hours:** Configure desired target daylight hours
- **Days Remaining:** Target days number to reach the target daylight hours
- **Sunrise Duration:** Duration of the sunrise sequence
- **Sunset Duration:** Duration of the sunset sequence
- **Night Light Mode:** Activate or deactivate the night light
- **Night Light Intensity:** Set the night light intensity
- **Schedule Active:** Activate/deactivate automatic progression
- **Schedule Starting Date:** Automation desired starting date

The screenshot shows a mobile application interface for 'Lighting Schedule Configuration'. The top bar is blue with a menu icon, the text 'Control Panel', and a three-dot menu icon. Below the bar, the title 'Lighting Schedule Configura...' is followed by a toggle switch that is turned on. The interface is divided into several sections: 1. Time Settings: 'Current Sunrise T...' is set to 6:00 AM, and 'Current Sunset Ti...' is set to 3:48 PM. 2. Adjustment Mode: A dropdown menu is set to 'Fixed Sunrise'. 3. Target Daylight Hours: A slider is set to 8.0. 4. Days Remaining: A slider is set to 28. 5. Sunrise Duration: A slider is set to 30 minutes. 6. Sunset Duration: A slider is set to 30 minutes. 7. Night Light Mode: A toggle switch is turned on. 8. Night Light Intensity: A slider is set to 3%. 9. Schedule Active: A toggle switch is turned on. 10. Schedule Start...: A date picker is set to 7/20/2025. At the bottom, the IP address '192.168.4.1' is displayed.

Setting	Value
Current Sunrise T...	6 : 00 AM
Current Sunset Ti...	3 : 48 PM
Adjustment Mode	Fixed Sunrise
Target Daylight Hou...	8.0
Days Remaining	28
Sunrise Duration	30 minutes
Sunset Duration	30 minutes
Night Light Mode	On
Night Light Intensity	3%
Schedule Active	On
Schedule Start...	7/20/2025

Status Monitoring

- Current Schedule: View active sunrise/sunset times
- Progress Tracking: Monitor schedule advancement
- System Status: Check automation health

 Control Panel 

 **Advanced Schedule Status**

 Bird Lighting Schedule Summary

Current Schedule:

-  Sunrise: 06:00:00
-  Sunset: 15:48:00
-  Current Daylight:
9.8 hours
-  Mode: Fixed Sunrise
-  Night Light:  3.0%

Schedule Progress:

-  Target: 8.0 hours
-  Days remaining: 28.0 days
-  Started: 2025-07-20
-  Status:  ACTIVE & PERSISTENT
-  Progress: 40.0%

Sequence Settings:

-  Sunrise Duration: 30.0 minutes
-  Sunset Duration: 30.0 minutes

System Status:

-  Auto-calculator:  ACTIVE (updates at midnight)

Reference (Natural Sun):

192.168.4.1

Manual Controls

- Test Functions: Manually trigger sunrise/sunset sequences
- Recalculate: Update schedule calculations
- Override Controls: Manual device operation

 **Manual Controls**

  Test Sunrise Sequence 

  Test Sunset Sequence 

  Recalculate Schedule 

7. Operating Instructions

7.1 Setting Up Your First Schedule

Step 1: Define Your Starting Point

1. Navigate to Schedule Configuration
2. Set current Sunrise Time (e.g., 7:00 AM)
3. Set current Sunset Time (e.g., 7:00 PM)
4. Record current daylight hours (will be calculated automatically)

Step 2: Set Your Target

1. Enter Target Daylight Hours (e.g., 14 hours for breeding season)
2. Set Days to Target (recommended: 14-30 days for gradual change)
3. Set Schedule Type: Fixed Sunset, Fixed Sunrise, or Balanced
4. Set Sunset and Sunrise Duration Time
5. Set Schedule Start Date (typically today's date)
6. Night Light On or Off
7. Set Night Light Intensity if On

Step 3: Activate Schedule

1. Toggle Schedule Active to ON
2. System will automatically calculate daily adjustments
3. Monitor progress in the Status Monitoring section

7.2 Understanding Schedule Progression

The system automatically calculates small daily adjustments to gradually reach your target:

- Daily Adjustment: $\text{Total change} \div \text{Number of days}$
- Automatic Updates: Schedule recalculates daily at midnight
- Progress Tracking: View percentage completion and days remaining

Example:

- Current: 12 hours daylight
- Target: 14 hours daylight
- Duration: 20 days
- Type: Balanced Schedule
- Daily increase: 6 minutes per day split between sunset (3 minutes) and sunrise (3 minutes)

7.3 Monitoring System Operation

Daily Operation:

1. Sunrise Sequence: Lights gradually brighten over 30 minutes
2. Daylight Period: Full brightness maintained

3. Sunset Sequence: Lights gradually dim over 30 minutes
4. Night Period: Lights off (unless night mode enabled)

Status Indicators:

-  Green: System operating normally
 -  Yellow: Manual override active
 -  Red: System error or device offline
-

8.1 Device Configuration

The device is already shipped with a paired bulb and plug. Follow these instruction if you want to pair additional bulbs:

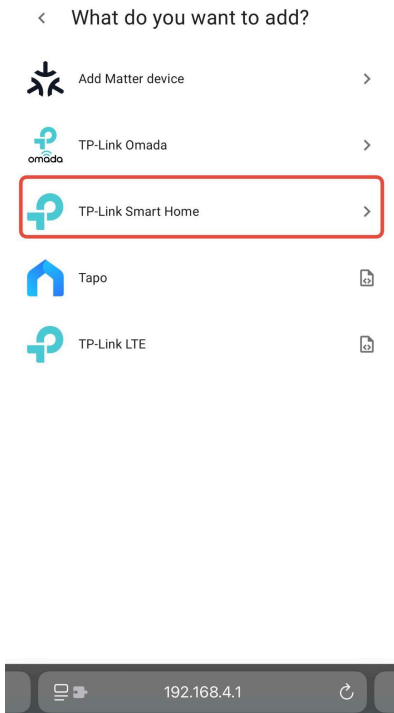
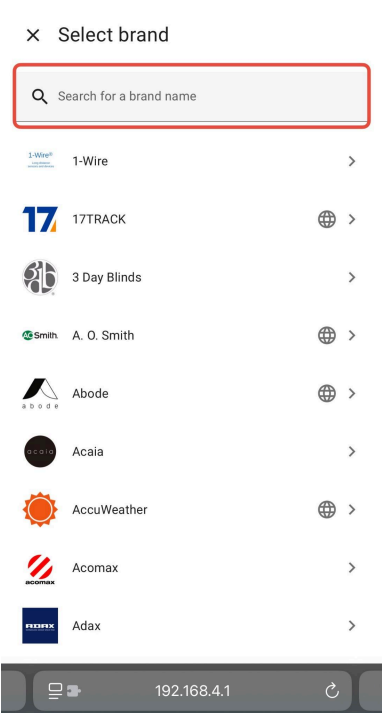
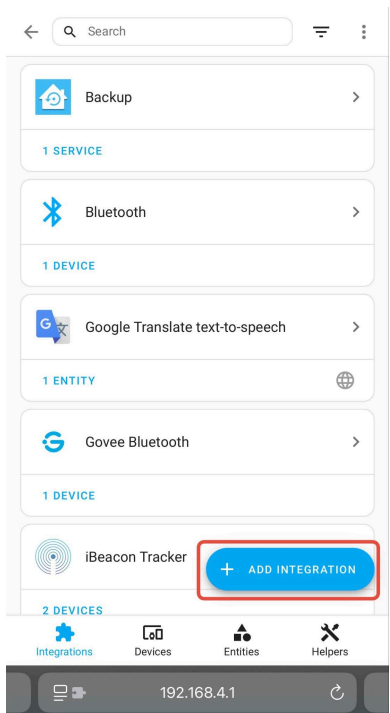
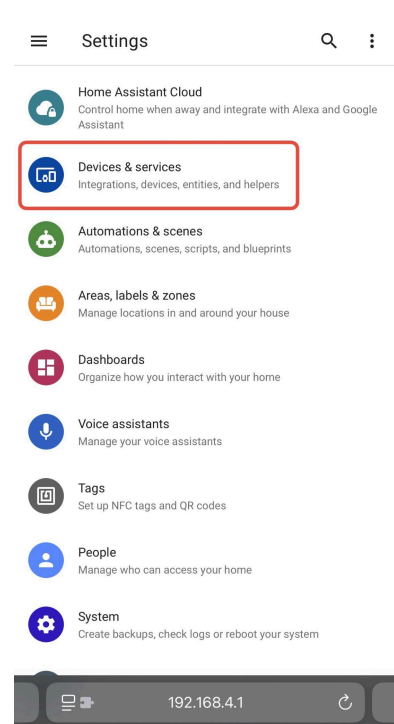
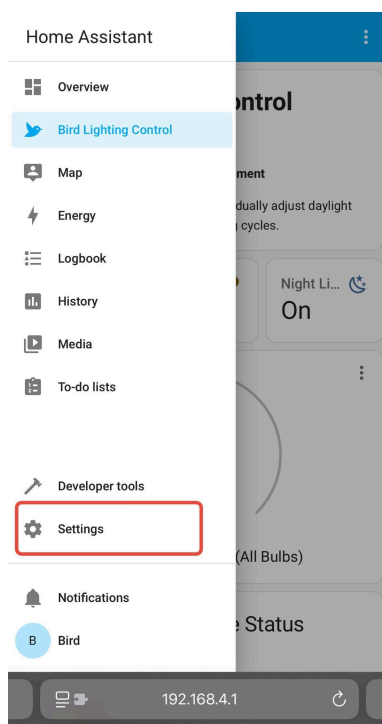
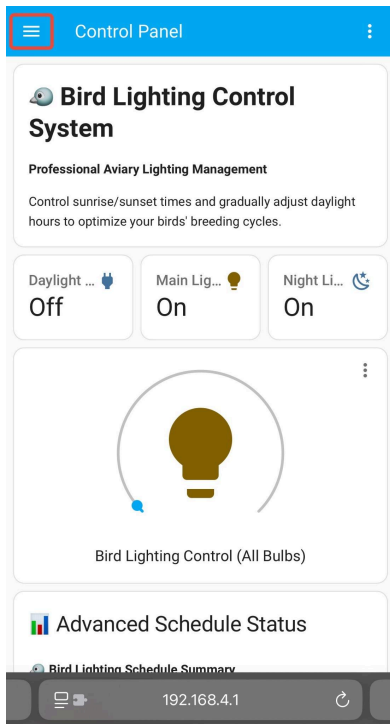
1. Follow bulb manufacturer instructions to pair the bulb to the LightFusion WiFi network
2. Use LightFusion WiFi and the password (provided above) when requested on the bulb manufacturer mobile app.
3. Finish pairing the bulb to the LightFusion WiFi through the manufacturer mobile app

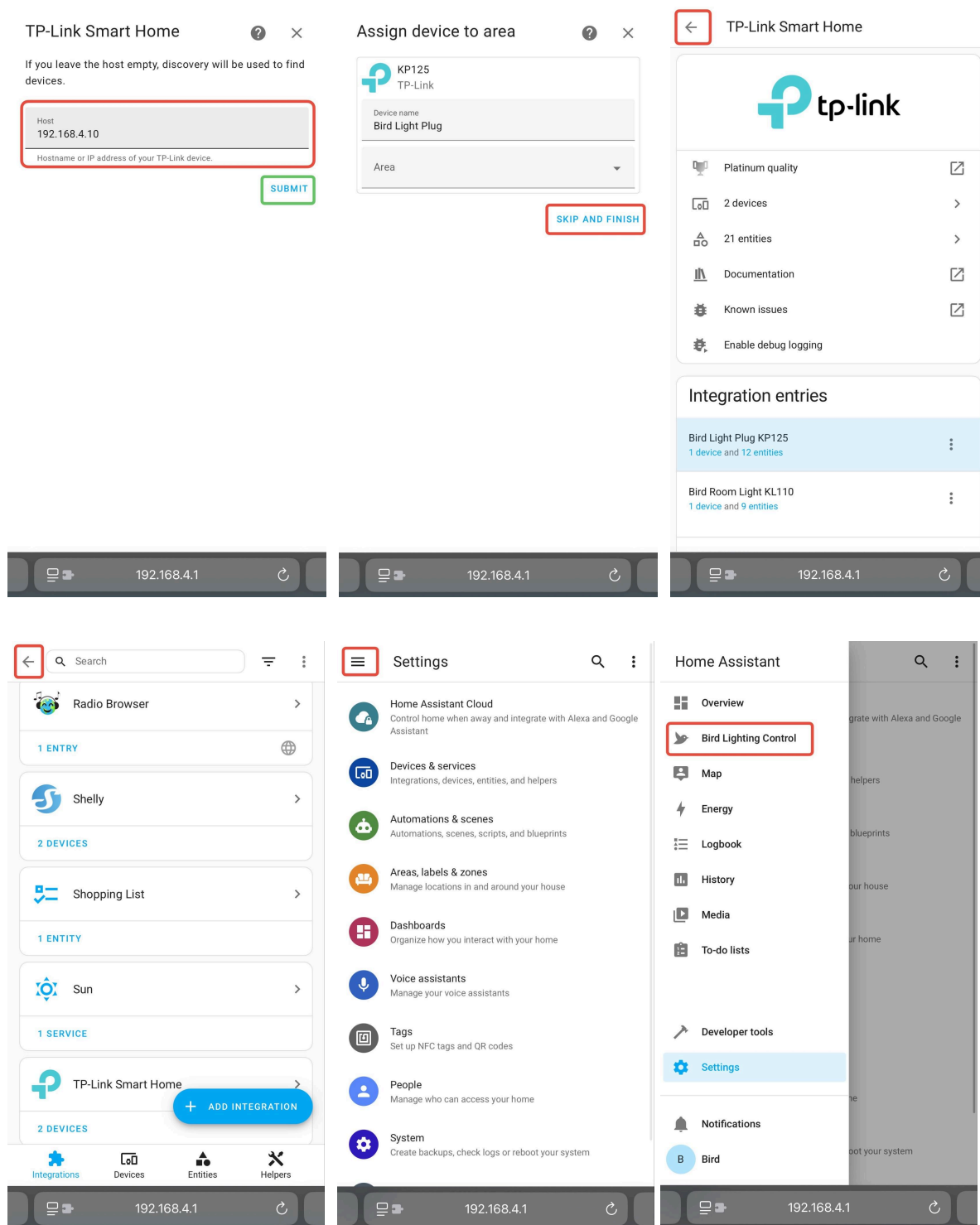
Adding Smart Bulbs:

4. Navigate to Settings → Devices & Services
5. Click + Add Integration
6. Select your bulb manufacturer (e.g., "Shelly", "TP-Link")
7. Enter the bulb IP address (See section 6.5 for how to find the bulb IP address)
8. Assign descriptive names (e.g., "Main Aviary Light")

Adding Smart Plugs:

1. Follow same process as bulbs
2. Name plugs descriptively (e.g., "Fluo Lamp Plug")
3. Test each device to ensure proper operation

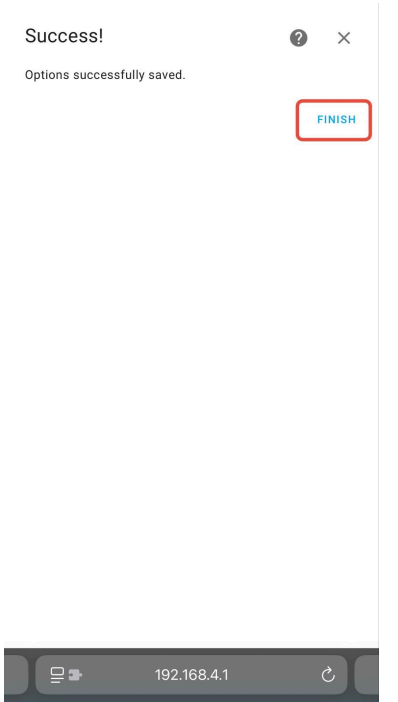
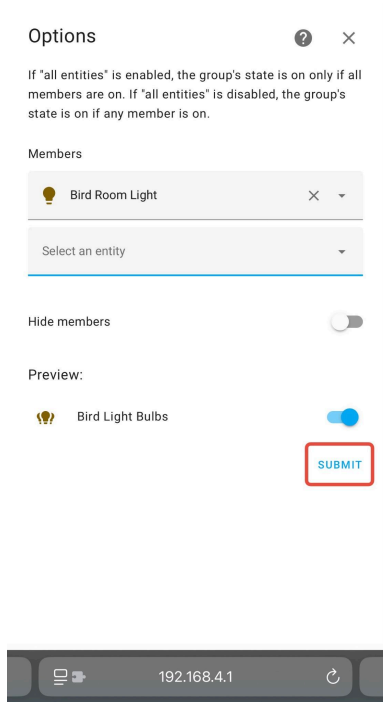
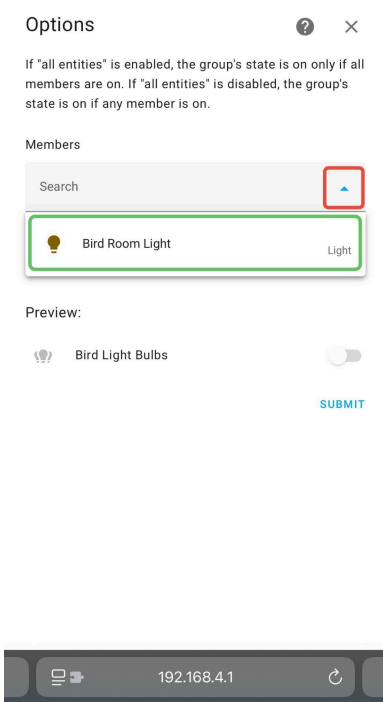
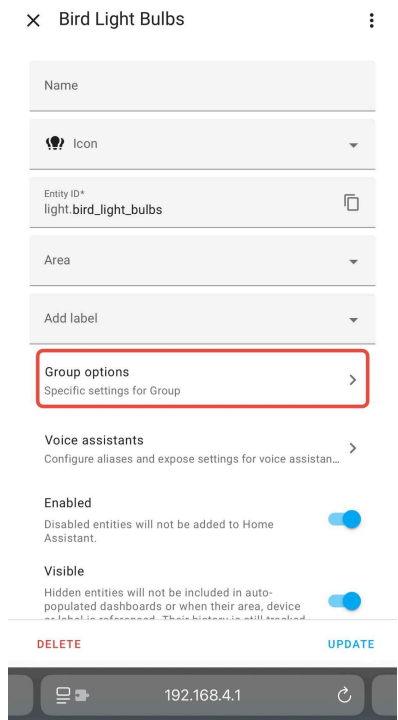
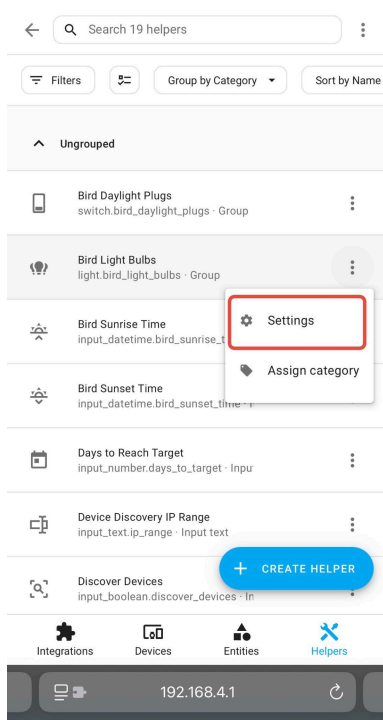
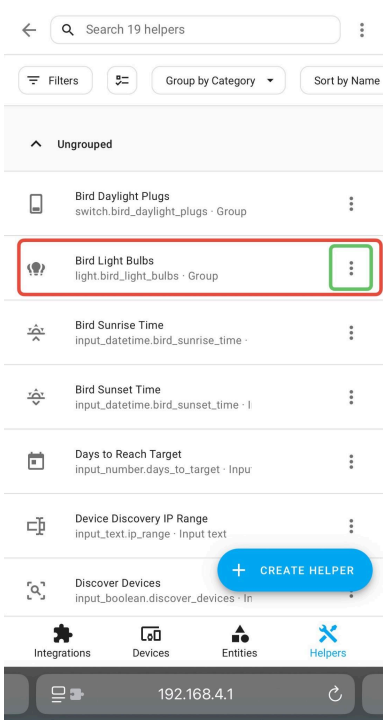


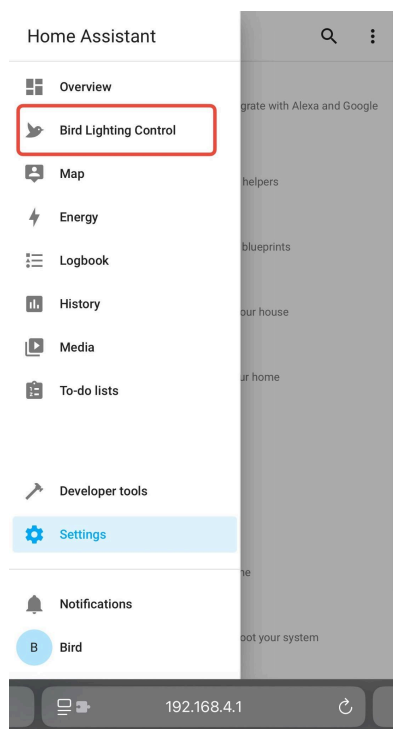
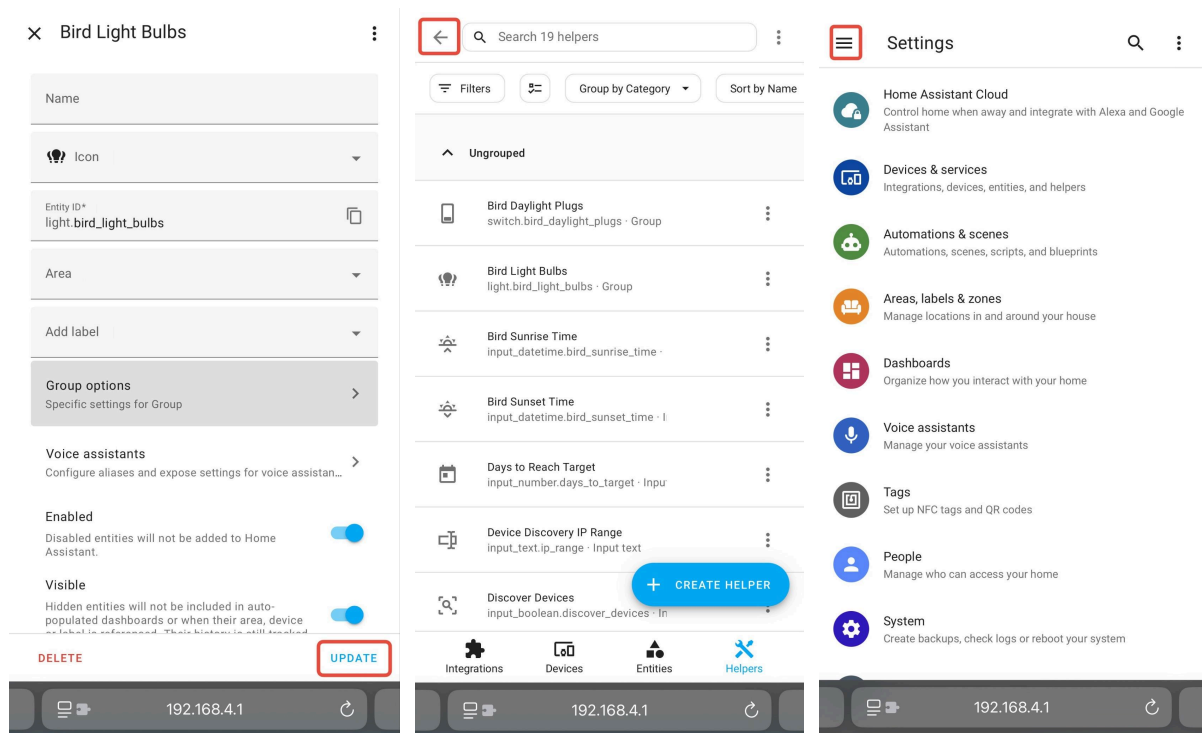


8.4 Add your Bulb/Plug to the Dashboard Groups

For Bulbs

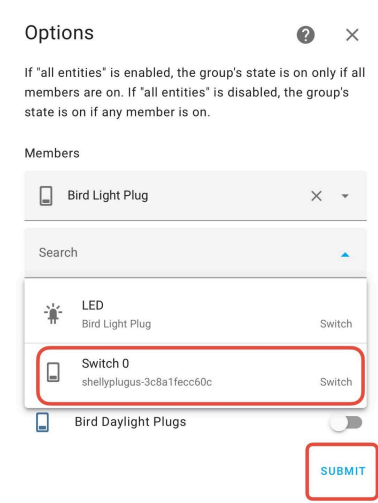
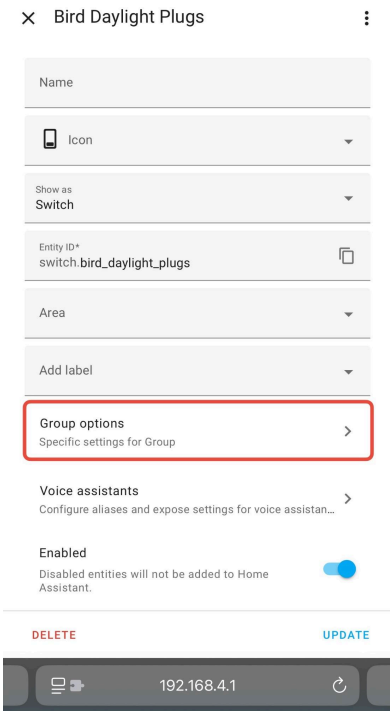
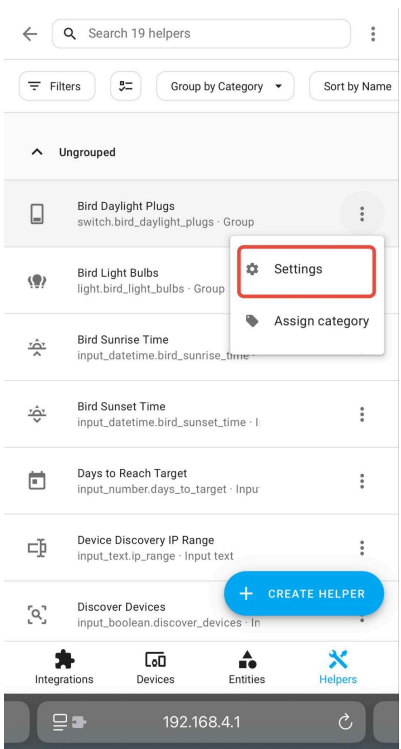
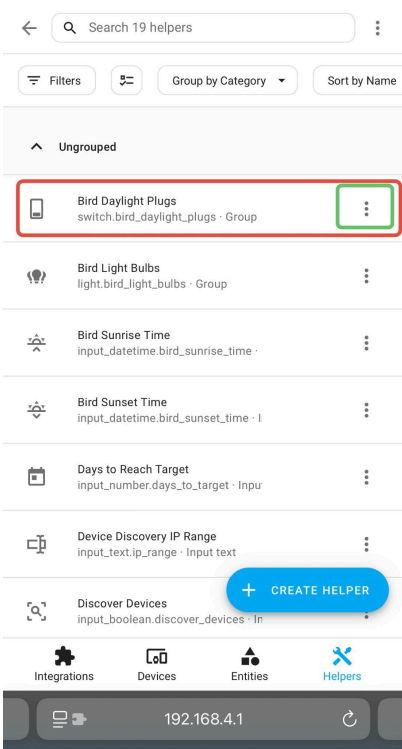
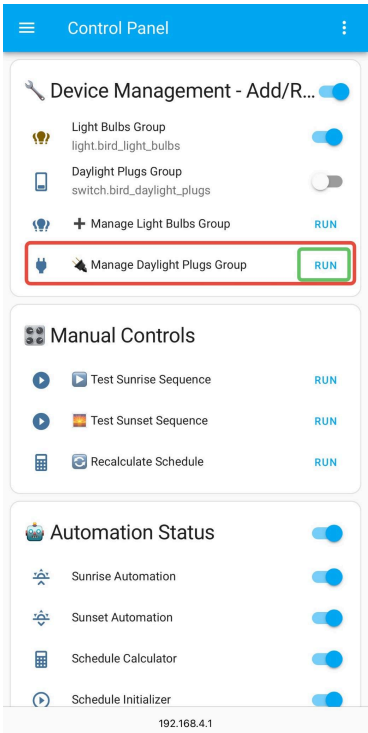
1. Navigate to Dashboard → Devices Management → Manage Light Bulbs Group
2. Click three dots in front of Bird Light Bulbs → Setting
3. Click on Group options
4. Click on the arrow in the search bar → select your bulb → submit → Finish → Update

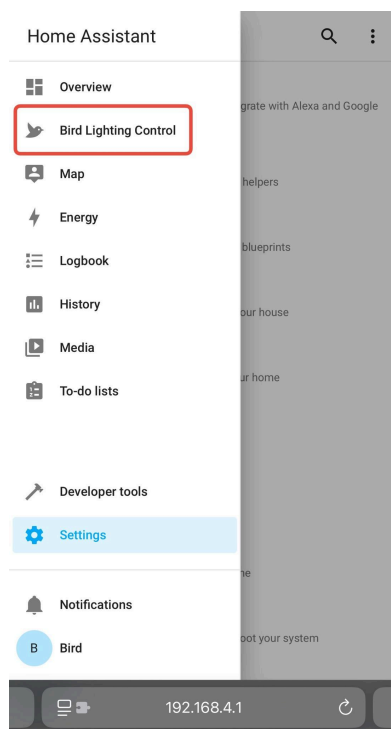
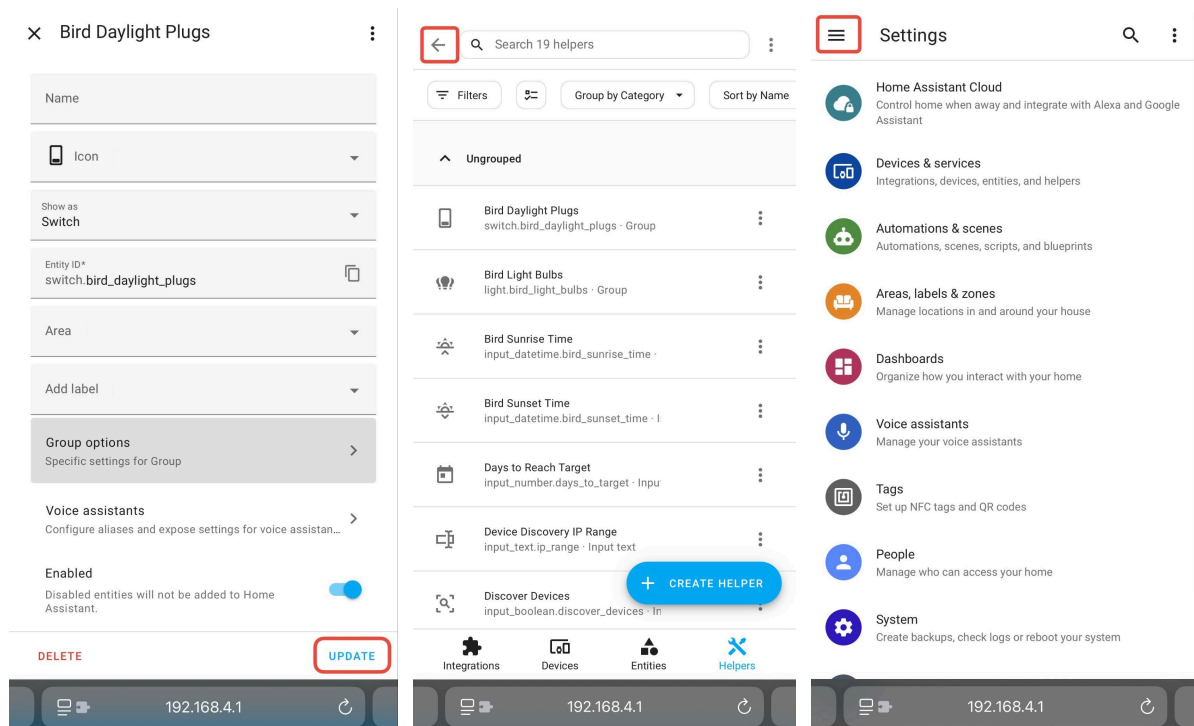




For Plugs

4. Navigate to Dashboard → Devices Management → Manage Daylight Plugs Group
5. Click three dots in front of Bird Daylight Plugs → Setting
6. Click on Group options
7. Click on the arrow in the search bar → select your plug → submit → Finish → Update





8.5 How to discover your Bulb/Plug IP address

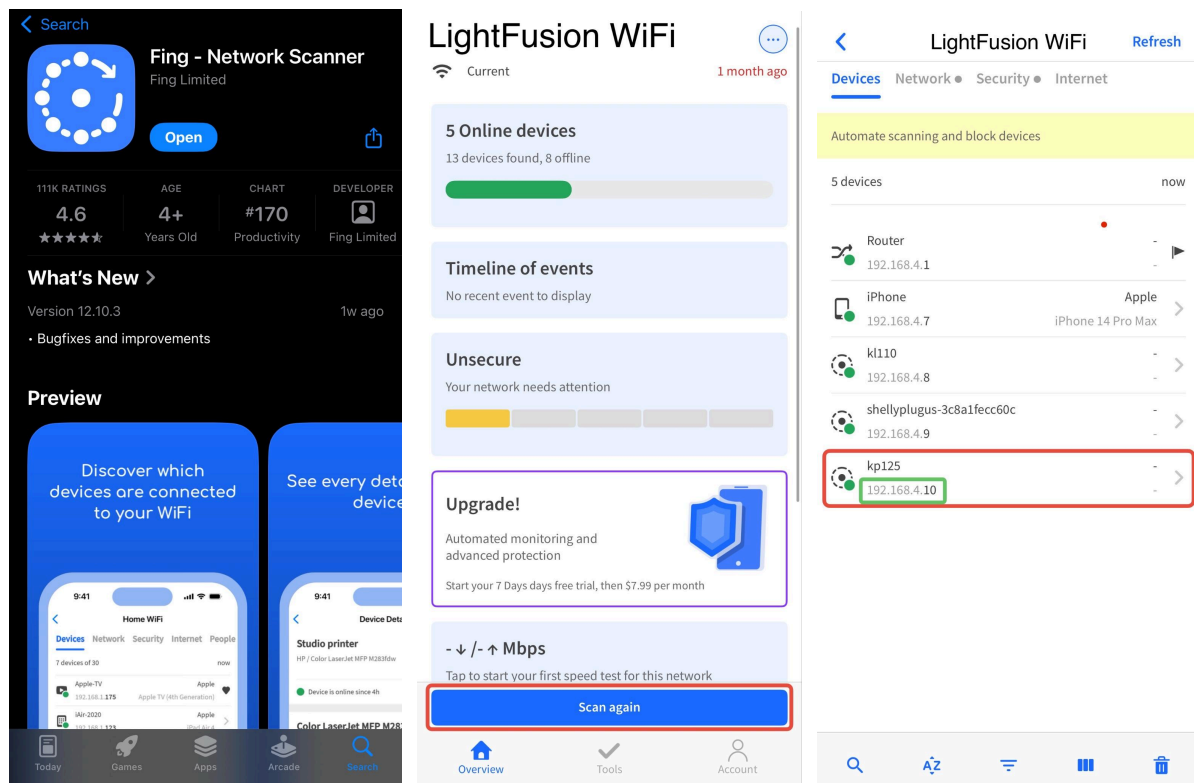
To discover your Bulb/Plug IP address, you will need to have access to a mobile phone with internet access.

1. Access Apple Store/ Google Store and download: Fing – Network Scanner

2. On your phone, connect to LightFusion WiFi (use the password provided above)

3. Open Fing – Network Scanner and search for connected devices

4. Locate the newly paired bulb/plug and write down its IP address.



9. Advanced Features

9.1 Custom Light Sequences

Sunrise Sequence Customization:

- Duration: Adjust fade-in time (15-60 minutes)
- Color Temperature: Warm to cool transition

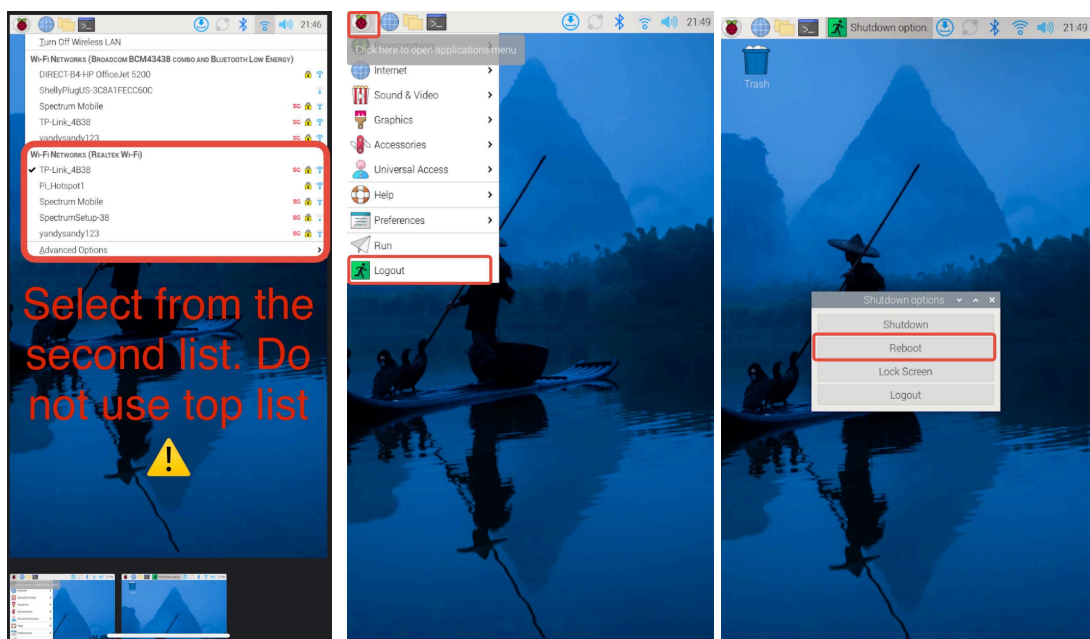
Sunset Sequence Customization:

- Duration: Adjust fade-out time (15-60 minutes)
- Color Temperature: Cool to warm transition

9.2 Connect the Device to your Home Internet

This section is only for internet supported devices. The Internet will allow you to listen to live radio stations and receive live weather status. To connect your LightFusion device to the internet, follow the following direction:

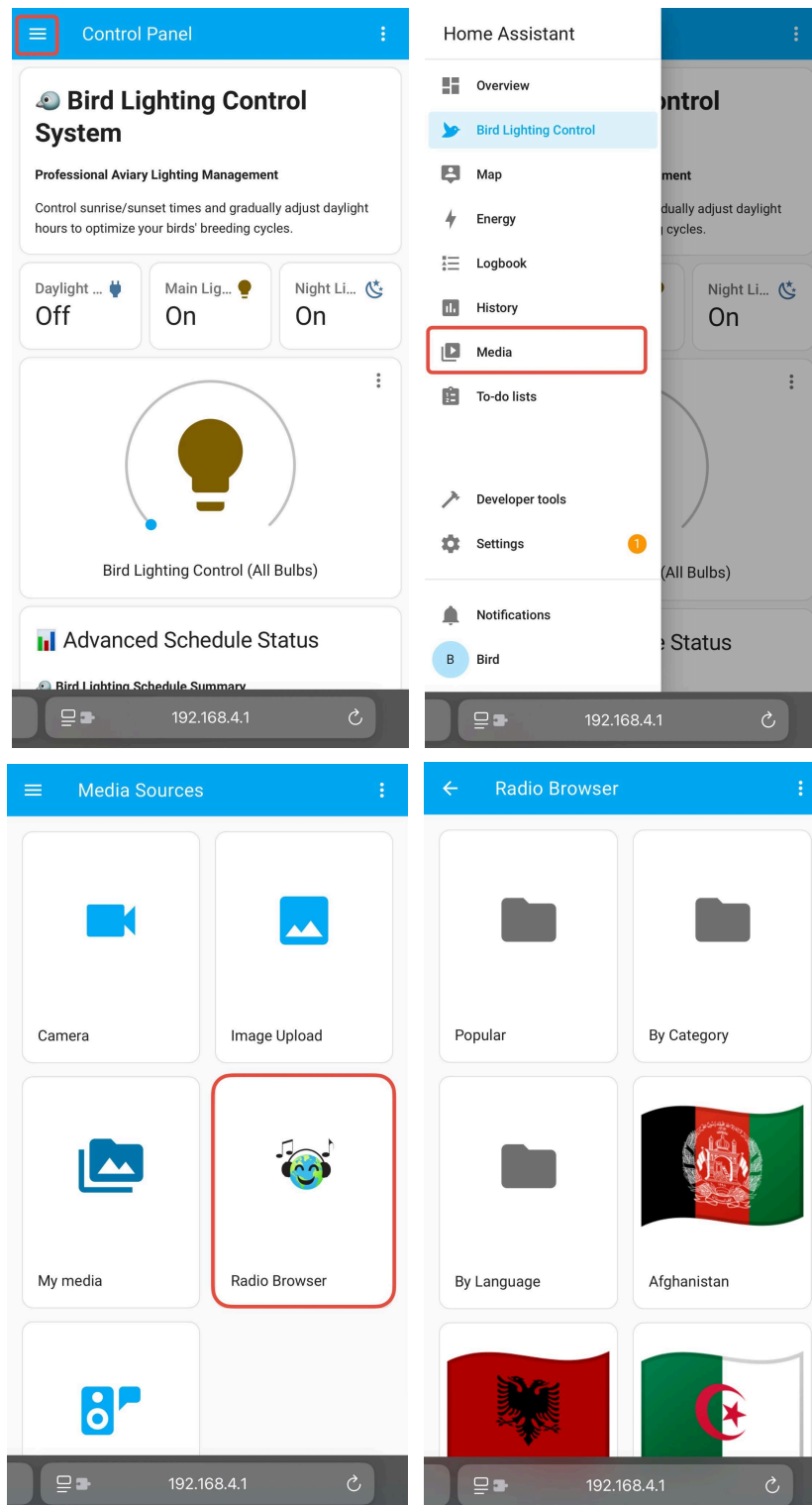
- Use the provided keyboard and click on Alt+F4 simultaneously
- The light control system will close automatically
- Click on the wifi icon on the top navigation bar: this will open available wifi list
- Select your home wifi and enter the password: **MAKE SURE TO SELECT YOUR HOME WIFI FROM THE SECOND LIST. THIS IS VERY IMPORTANT.**
- Once connected, reboot the LightFusion device
- Then follow the steps in the pictures to access the available radio stations



9.3 Access to Worldwide Radio Stations

If you purchased the Radio version of the LightFusion device, please follow these steps to access live stream from worldwide radio stations:

- Click on the top left the bars on the dashboard screen
- Select Media from the side list
- Select Radio Browser from the list
- Select the country and the radio station you want to play
- Leaving the radio page will automatically turn off the live stream



9.4 Data Logging and Analysis

The system automatically logs:

- Daily Light Exposure: Total hours per day
- Device Status: On/off cycles and reliability

- Schedule Adherence: Actual vs. planned timing
- System Health: Error logs and maintenance alerts

10. Troubleshooting

10.1 Common Issues and Solutions

System Won't Start

Symptoms: Control hub doesn't power on:

1. Check power supply connection
2. Verify power outlet functionality

Smart Devices Not Detected

Symptoms: Bulbs or plugs don't appear in device list Solutions:

1. Ensure devices are connected to the Hub network (LightFusion WiFi)
2. Check device power and network connectivity
3. Manually add devices through integrations
4. Restart device discovery process

Schedule Not Working

Symptoms: Lights don't follow programmed schedule Solutions:

1. Verify Schedule Active is enabled
2. Check sunrise/sunset times are realistic
3. Confirm automation status (should be ON)
4. Manually trigger test sequences

Lights Not Responding

Symptoms: Individual devices don't respond to commands Solutions:

1. Check device power and network connection
2. Test device manually through device page
3. Remove and re-add problematic devices
4. Check dashboard group membership

10.2 Error Messages

Error Message	Cause	Solution
"Device Unavailable"	Network connectivity issue	Check device network connection
"Schedule Calculation Error"	Invalid time settings	Verify sunrise/sunset times

"Automation Disabled"	Manual override active	Re-enable automation in settings
"Group Empty"	No devices in group	Add devices to light/plug groups

10.3 System Maintenance

Daily Checks:

- ☐ Verify schedule status
- ☐ Check device connectivity
- ☐ Monitor bird behavior

Weekly Checks:

- ☐ Review system logs
- ☐ Test manual overrides
- ☐ Clean device sensors
- ☐ Backup configuration

Monthly Checks:

- ☐ Update system software
- ☐ Check electrical connections
- ☐ Calibrate timing accuracy
- ☐ Review data logs

11. Maintenance

11.1 Routine Maintenance Schedule

Monthly Tasks:

1. Clean Smart Bulbs: Wipe down bulbs with dry cloth
2. Check Connections: Ensure all plugs are secure
3. Update Software: Apply system updates if available
4. Backup Configuration: Export settings to safe location

Quarterly Tasks:

1. Deep Clean: Thorough cleaning of all components
2. Connection Inspection: Check all electrical connections
3. Performance Review: Analyze system logs and performance
4. Calibration Check: Verify timing accuracy

11.2 Backup and Recovery

Creating Backups:

- 1. Navigate to Settings → System → Backups
- 2. Click Create Backup
- 3. Download backup file to safe location
- 4. Schedule automatic backups monthly

Restoring from Backup:

- 1. Access Settings → System → Backups
- 2. Click Upload Backup
- 3. Select backup file
- 4. Follow restoration wizard

12. Technical Specifications

12.1 Control Hub Specifications

Specification	Details
Processor	ARM Cortex-A72 Quad-core
Memory	4GB RAM, 32GB Storage
Connectivity	Ethernet, Wi-Fi, USB
Power	12V DC, 2A (24W max)
Operating Temp	0°C to 35°C (32°F to 95°F)
Dimensions	85 × 56 × 17mm
Weight	45g/500g

12.2 Supported Device Specifications

Smart Bulb Compatibility:

- Protocols: Wi-Fi
- Voltage: 110-240V AC
- Wattage: Up to 100W per bulb
- Color Temperature: 2700K-6500K
- Dimming: 1-100% brightness control

Smart Plug Compatibility:

- Protocols: Wi-Fi
- Voltage: 110-240V AC
- Current: Up to 15A per plug
- Load: Resistive, inductive, LED compatible

12.3 Environmental Specifications

Parameter	Operating Range	Storage Range
Temperature	0°C to 35°C	-20°C to 60°C
Humidity	20% to 80% RH	5% to 95% RH
Altitude	0 to 2000m	0 to 10000m

13. Warranty Information

13.1 Limited Warranty Coverage

FunkyFoliageCo LLC warrants this product to be free from defects in materials and workmanship for a period of SIX (6) MONTHS from the date of original purchase.

What's Covered:

- Manufacturing defects
- Component failures under normal use
- Software defects and bugs
- Documentation errors

What's Not Covered:

- Damage from misuse or abuse
- Normal wear and tear
- Damage from power surges
- Third-party device failures
- User configuration errors

13.2 Warranty Service

To obtain warranty service:

1. Contact customer support
2. Provide proof of purchase and serial number
3. Describe the problem in detail
4. Follow troubleshooting steps if requested
5. Return authorization will be provided if needed

14. Contact Support

14.1 Customer Support

Technical Support Hours:

- Monday - Friday: 8:00 AM - 8:00 PM EST
- Saturday: Closed
- Sunday: Closed

Contact Information:

- Phone: +1 (126) 505-3891
- Email: funkyfoliagecollc@gmail.com
- Website: []
- Live Chat: Available on website during business hours

14.2 Online Resources

- Knowledge Base: []
- Video Tutorials: []
- Community Forum: []
- Software Downloads: []

14.3 Professional Services

Installation Services: Professional installation available in select areas.

Consultation Services: Breeding program optimization and custom configurations.

Training Services: On-site or remote training for commercial operations.

Appendices

Appendix A: Quick Reference Guide

Daily Operation Checklist:

- [] Check dashboard status indicators
- [] Verify schedule progression
- [] Monitor bird behavior
- [] Note any system alerts

Emergency Procedures:

- Power Outage: System will resume automatically
- Network Outage: Manual controls remain functional
- Device Failure: Use manual overrides until replaced

Appendix B: Configuration Examples

Breeding Season Schedule:

- Start: 10 hours daylight
- Target: 14 hours daylight
- Duration: 21 days
- Daily increase: ~11 minutes

Molting Season Schedule:

- Start: 14 hours daylight
- Target: 8 hours daylight
- Duration: 28 days
- Daily decrease: ~13 minutes

Appendix C: Compatible Device List

Smart Bulbs:

- TP-Link Kasa bulbs: KL110, KL124, HS210, HS200, HS220
- SHELLY Smart bulbs: all models

Smart Plugs:

- TP-Link Kasa bulbs: KP115, HS103
- Shelly Smart bulbs: all models

Other models and references might be compatible but we do not guarantee the best operation.

Open-Source License Notice Template (For Home Assistant)

Open Source Software Notice

This product includes open-source software components. Key components include:

Home Assistant

License: [Apache License 2.0](#)

Copyright © The Home Assistant Authors

Home Assistant is used as a local automation engine and control interface in this device.
This product is **not affiliated with or endorsed by Nabu Casa, Inc.** or the Home Assistant project.

Other open-source software may be used in accordance with their respective licenses.

You may view a full copy of the Apache 2.0 License at:

<https://www.apache.org/licenses/LICENSE-2.0>

Contact & Support

If you have questions or issues regarding this device, please contact:

 [**support@aviaryneeds.com**](mailto:support@aviaryneeds.com)

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Manual Version: 1.0

Product Version: Compatible with firmware v2.0+

Last Updated: 08/01/2025

Document ID: [Manual-ALC-v1.0]