CRACK OF DAWN™ User Manual

Version 1.1 | Pastured Steps, LLC

1. Introduction

The **CRACK OF DAWN™** is a smart lighting solution designed to raise pullets and optimize egg production for layers. By utilizing a Real-Time Clock (RTC) and GPS coordinates, the system automatically calculates local sunrise and sunset times to provide the optimal amount of supplemental light for your flock.

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2. Quick Start Guide

Follow these steps to initialize your controller.

2.1 Power & Connectivity

1. **Power Up:** Connect a 12V DC power supply to the `VIN(+)` and `VIN(-)` screw terminals.
    - *Specification:* The controller can handle a wide range of input voltage (5-28V DC), but your lighting must match this voltage.
2. **Connect to Wi-Fi:** Open the Wi-Fi settings on your smartphone or device.
3. **Select Network:** Connect to the network named `Crack-of-Dawn-XXXX` (where XXXX is a unique code).
4. **Enter Password:** The default password is `12345678`.

2.2 Accessing the Interface

1. Once connected, your device should automatically open the "Sign In" or "Log In" page.
2. If it does not automatically load, open a web browser and navigate to:
    - `http://192.168.4.1` OR
    - `http://crackofdawn.local` (not available on all devices)

Note: Ensure you use `http` and NOT `https`.

Pro Tip: Once the page successfully loads, select "Add to Home Screen" in your browser menu to create a dedicated app icon on your phone.

2.3 Initial Configuration

- **Set Location:** Navigate to **Settings > Location**. Enter your Latitude and Longitude to ensure accurate sunrise/sunset calculations. Use at least 2 decimal places for accuracy.
- **Set Date/Time:** Navigate to **Settings > Date/Time**. Verify the Date, Time, and Timezone are correct.

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3. Wiring Instructions

Terminal Block

- **VIN(+):** Connect a 12 VDC Positive supply (POS on the Battery)
- **VIN(-):** Connect a 12 VDC Negative supply (NEG on the Battery)
- **VOUT(+):** Positive wire to 12V DC lighting
- **VOUT(-):** Negative wire to 12V DC lighting

Pro Tip: See our online Support Center (https://www.crackofdawnlighting.com/support) for a complete Solar Installation example.

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4. Dashboard Overview

The Home screen provides real-time system status.

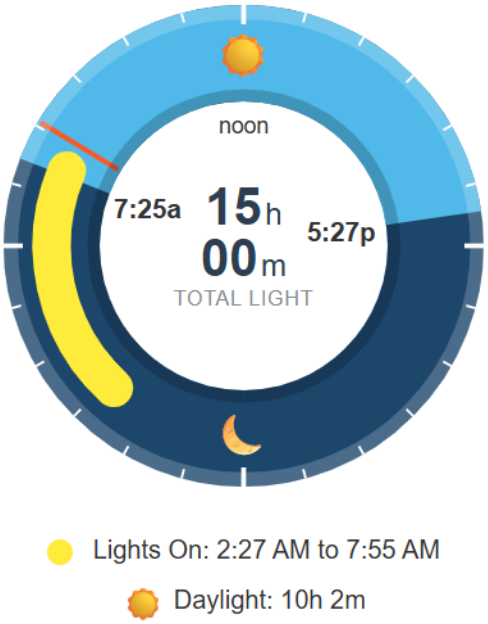
System Status

- **LIGHTS ARE ON:** The system is currently illuminating the coop.
- **WARMING UP (__%):** Lights are in the "Ramp Up" phase, simulating a gentle sunrise.
- **LIGHTS ARE OFF:** The system is idle.
- **SYSTEM DISABLED:** The mode is set to "Off," and the lights will not come on.

Visual Cycle Ring

This graphical ring displays a 24-hour cycle with noon at the top. Sunrise and Sunset times are displayed on the ring.

- **Light Blue (Upper Arc):** Daylight hours (Sunrise to Sunset).
- **Dark Blue (Lower Arc):** Night hours (Sunset to Sunrise).
- **Yellow:** Indicates when supplemental lights will run.
- **Orange Marker:** Indicates the current time of day.



Info Legend

- **Lights On:** Specific start/stop times for supplemental lighting.
- **Daylight:** Total hours of natural sunlight for the current day.
- **Center Display:** Total Light Duration (Natural + Supplemental) the hens will receive.

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5. Operation Modes

Configure your preferred mode in **Settings > Light Settings**.

A. 'Fixed' Mode (Layers)

Allows you to set a fixed amount of total light required.

- **Function:** You select a Total Light Duration from 8 to 16 hours. The system calculates your daylight for the day and determines the precise pre-dawn time to come on.

B. 'Pullet' Mode (Growing Birds)

Designed for raising young birds according to published lighting schedules for hybrid layers.

- **Setup:** Select '**Pullet**' mode and enter the hatch date of your flock.
- **Function:** The system automatically adjusts daily light duration based on bird age.
- **Note:** Once pullets are older than 25 weeks (176 days), the system maintains the recommended 16 hours of total light.

C. ‘Off’ Mode

- **Function:** Completely disables the lighting. The controller remains powered and accessible via Wi-Fi, but the lights will not come on.

D. Work Lights (Maintenance Mode)

- **Function:** Temporarily overrides the schedule to turn lights on for 4 hours. Useful for late-night coop maintenance, cleaning, or egg collection.
- **How to Activate:** Go to **Settings > Lighting** and tap the orange **"Turn On Work Lights"** button.
- **To Cancel:** You can cancel the timer early from the Home Dashboard.

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6. System Configuration

Date & Time Settings

- **Date:** Enter the current date.
- **Time:** Enter the current Standard time. Do not enter Daylight Saving Time (DST). *(Note: If you are setting the time during the summer, subtract one hour.)*
- **Timezone:** Select your Standard Timezone offset (e.g., UTC -6 for Central Time).

Location Settings

- **Latitude/Longitude:** Required for solar calculations.
- **Accuracy:** Coordinates can be found via Google Maps. (Right-Click or Long-press your location to see the coordinates.) Three decimal places are sufficient.
- The Map displayed is for reference only. The location dot may be 100 miles off in various parts of the country.

Network Settings

- **SSID:** You may rename the Wi-Fi broadcast name to distinguish between multiple controllers (chicken tractors). Each SSID must be unique.

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7. Features & Maintenance

Test Mode

Located on the Configuration page, this function verifies wiring and bulb health.

1. **Ramp Up:** Lights fade from 0% to 100% over 30 seconds.
2. **Full On:** Lights remain at max brightness for 5 minutes.
3. **Auto-Off:** Once complete, the system returns to the schedule.

Lighting Log & Power Watchdog

Located in the menu, this page tracks your system's history to verify your flock is getting the correct light.

- **Weekly Chart:** Blue bars represent natural daylight; yellow bars represent the supplemental light added by the controller.
- **Detailed History:** A text log shows exactly when lights turned On and Off each day.
- **Show Details Toggle:** Switch this ON to view advanced system events, including **System Reboots** and **Power Loss** events.
- **Power Loss Detection:** If power is cut, the system will log a red "Power Loss" entry showing exactly when the outage occurred and how long the device was down (e.g., *"Down for 2h 15m"*).

  Pro Tip: If you notice regular power outages, your solar system is probably undersized. Ensure you have adequate storage capacity and solar production. Alternatively, you may be able to reduce the overall lighting wattage.

System Health Dashboard

Accessed by clicking the Warning icon (⚠️) on the Home page or via the menu. This page monitors the physical health of your controller.

- **Board Temp:** Monitors the internal temperature of the electronics. If the unit exceeds safe limits (>160°F), a warning will appear.
- **RTC Status:** Verifies that the backup battery clock is functioning correctly.
- **Memory & Storage:** Shows system resource usage.
- **Uptime:** Tracks how long the system has been running since the last power cycle.

System Updates

Located on the "About" page. Please download the `.bin` files from our website (www.crackofdawnlighting.com/support) and use these to update your firmware.

- **Firmware:** Updates the controller's main operating code.
- **User Interface:** Updates the interface viewed on your mobile device.

Pro Tip: Always ensure the controller **Firmware is updated** before updating the User Interface.

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8. Troubleshooting

Issue	Probable Cause	Solution
"Time Not Set" Warning	Power Loss. The device lost power and the internal battery is dead or missing.	Go to **Settings > Date/Time** and click "Save" to re-sync.
Lights On at Weird Times	Timezone or DST Settings	Ensure that you have the correct timezone selected and that you are not using Daylight Saving Time (DST) offsets in the Timezone settings. *(Note: If setting in the summer, subtract 1 hour.)*
System Disabled	Mode Selection	Check **Settings > Light Mode** and ensure it is not set to "Off".
Warning - "RTC Hardware Failure"	The internal clock is not responding.	Ensure the CR1220 battery is seated correctly. If the error persists, the clock module may be damaged.
Warning - "System Overheating"	Board temperature > 160°F.	Ensure the controller is not in direct sunlight or the enclosure has adequate ventilation.
Repeated Red "Power Loss" entries	12V Battery supply interrupted.	Check your solar setup. Ensure adequate battery storage and sufficient Solar capacity.