

# birdzout<sup>®</sup>

for smart bird control



## Auto Laser Ultimate MK2

User Manual V1.0

# Introduction

Congratulations on your purchase of the Birdzout Auto Laser Ultimate MK2.

Please read through the instructions in this user manual carefully before operating the laser

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# 1. Package Contents

- 1 x Heavy Duty Transport Case
- 1 x Auto Laser Ultimate MK2
- 1 x Emergency Stop Box with Keys
- 1 x 5m Cable
- 1 x User Manual



# 2. Safety Warnings

- a) Avoid direct eye exposure to the laser beam. Direct eye exposure may result in eye damage.
- b) The Birdzout Auto Laser Ultimate MK2 must only be operating in controlled areas for the purpose of deterring birds. Installation and programming must be completed by responsible adults.
- c) Never project the beam towards aircraft, vehicles, roads, driveways, or flightpaths.
- d) Never project the beam towards humans.
- e) Never project the beam up into the sky.
- f) Never project the beam at reflective surfaces.
- g) After programming the zones, watch the beam movements for several cycles and ensure it is within the controlled area.
- h) Ensure all personnel including visiting contractors are aware of the health and safety around working within the areas controlled by the laser.

There is a helpful worksafe guide with recommendations around safe use of lasers for bird scaring, download link / QR code below.

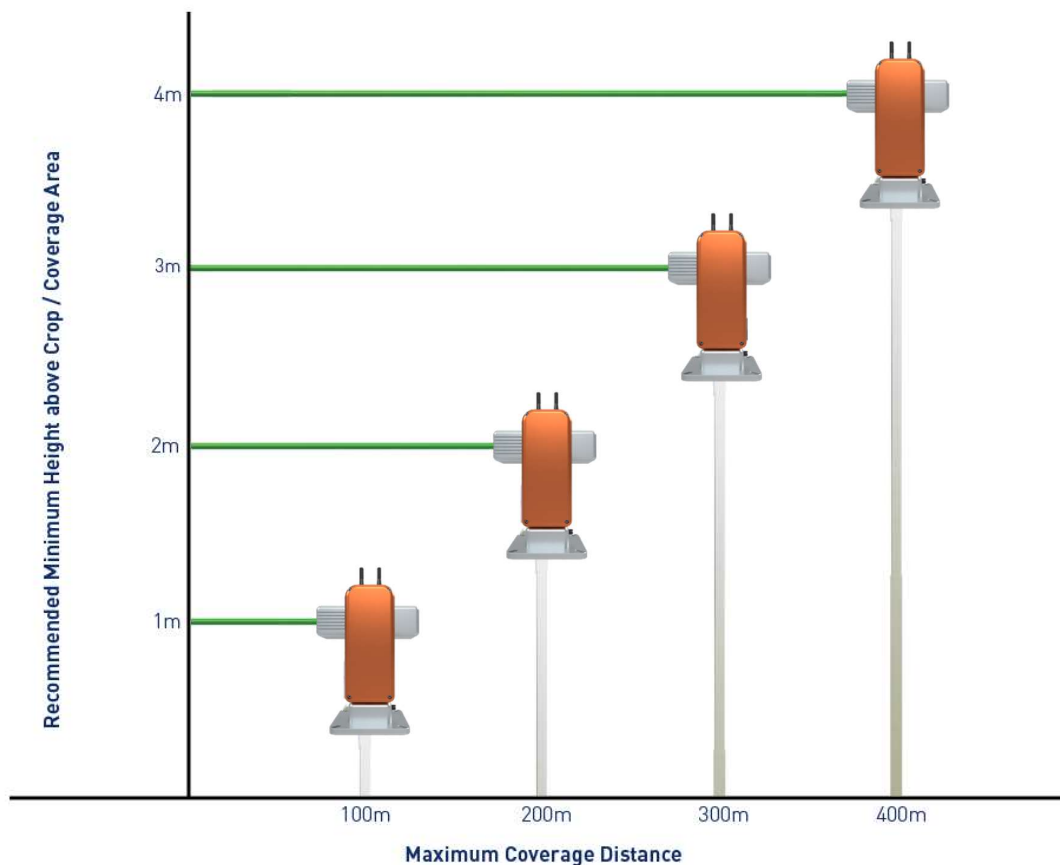
<https://www.worksafe.govt.nz/dmsdocument/41935-safe-use-of-lasers-for-bird-scaring/latest#:~:text=Make%20sure%20laser%20operators%20and,output%20for%20the%20effect%20required.>



## 3. Installation Instructions

### 3.1. Mounting Position and Height

- a) Discuss with your technical consultant to determine the coverage area based on the recommended maximum coverage distance and area for your situation. This is influenced by the level of bird pressure, surrounding vegetation and the terrain of the area to be covered. I.e. any slope, contours etc.
- b) Mount the Birdzout Auto Laser Ultimate MK2 in a position close to the areas with the highest bird pressure, that still allows the beam to reach throughout the entire coverage area.
- c) Ensure the mounting system for the laser is stable and level and has no risk of any movement.



The mounting height should be as high as possible. As an approximate guide; for every 100m of range required, position the laser a minimum of 1m above the crop / coverage area, as per the chart above.

Note: if the coverage area is close to a road, it is recommended that the laser is mounted on the roadside boundary.

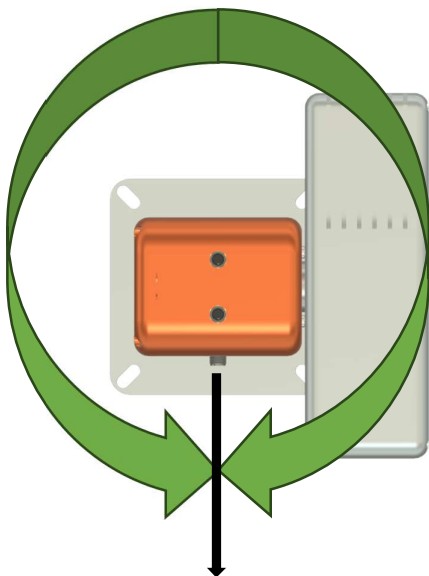
### 3.2. Laser Installation

When mounting the laser, note that while the laser has full 360 degrees of movement, there are mechanical hard stops on both pan and tilt to continuous rotation. The pan hard stop is positioned when the laser head is pointing to the back of the unit. (The connector on the base is at the rear of the unit).

It is recommended to mount the laser with the rear of the unit facing a lower bird pressure area, or where it is less needed to pan back and forth.

Mount the emergency stop box where it can be easily accessed - cable length from the laser is 5m long.

*Image shows position of the Pan Mechanical Hard Stop, in-line with the connector (rear of unit)*



- a) After the Laser is mounted in position, connect the female end of the 5m cable to the connector in the base of the laser. Ensure it is fastened tight.



- b) Run the cable down to where the emergency stop box will be located (if the cable will be hanging loose, hold in place with cable ties).
- c) Connect the other end of the cable to emergency stop box.



- d) Connect the power to the other connector on the emergency stop box. Note: Power requirements for the laser are 24V, 3A minimum.
- e) To start the laser, rotate the emergency stop switch clockwise, it will pop out and the laser will start its calibration process. This can take 30-60 seconds. During this time, the LED on the emergency stop will flash light blue, then change to green once calibration is completed.

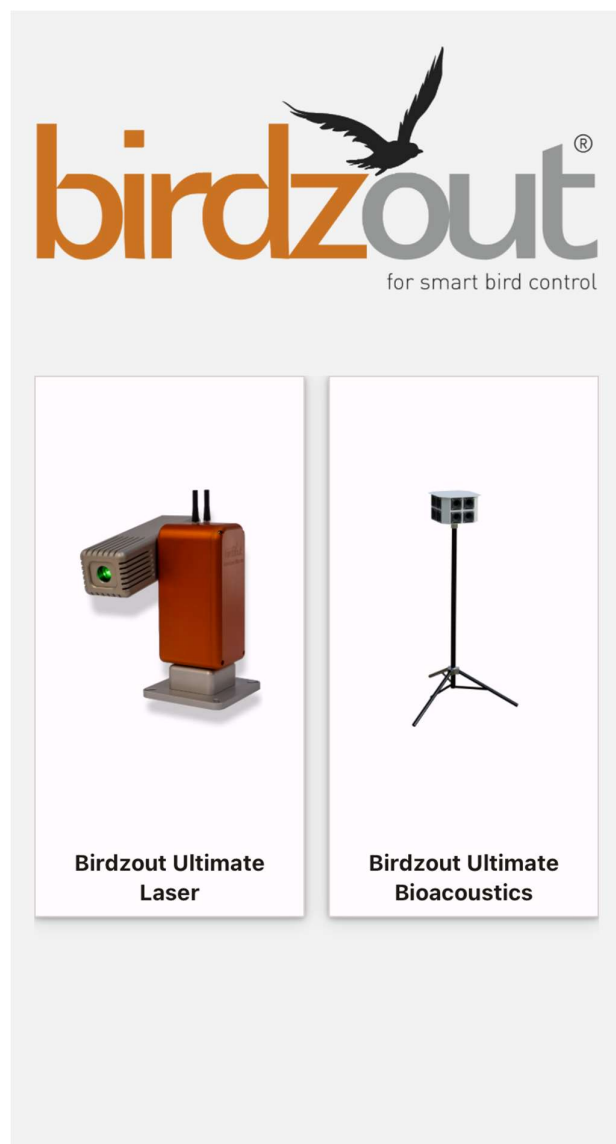
## 4. Programming Instructions

### 4.1. App Download Instructions

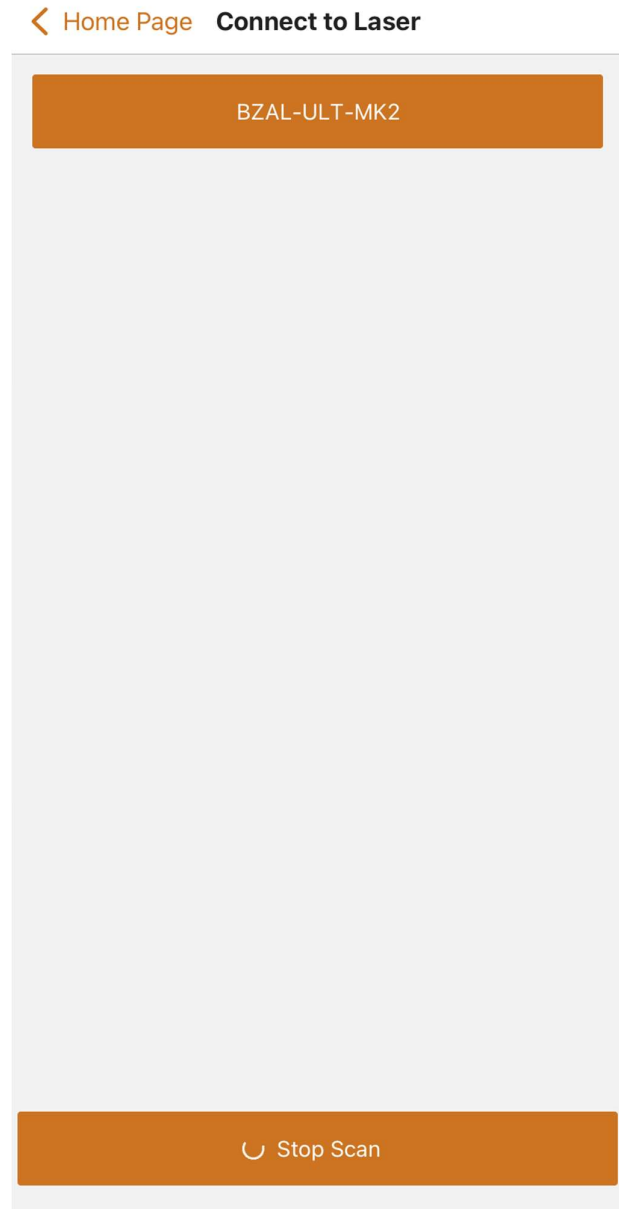
Search Google Play (Android) or the App Store (iOS) for Birdzout. (or scan the QR Codes on the Back Page) Select and Install the Birdzout App.

### 4.2. Connecting App to Laser

- a) Ensure Bluetooth is switched on.
- b) Open the Birdzout App.
- c) Press “Birdzout Ultimate Laser”.



- d) Press “Scan for Devices”.



- e) A list of any lasers within Bluetooth range will show. If more than one is nearby, you can tell which one you are connecting to by the LED indicator on the Emergency stop flashing Dark Blue.

Note: it is best for the phone to have visual line of sight with the antennas when connected.

f) Enter the Access Pin Code (default is 0000)

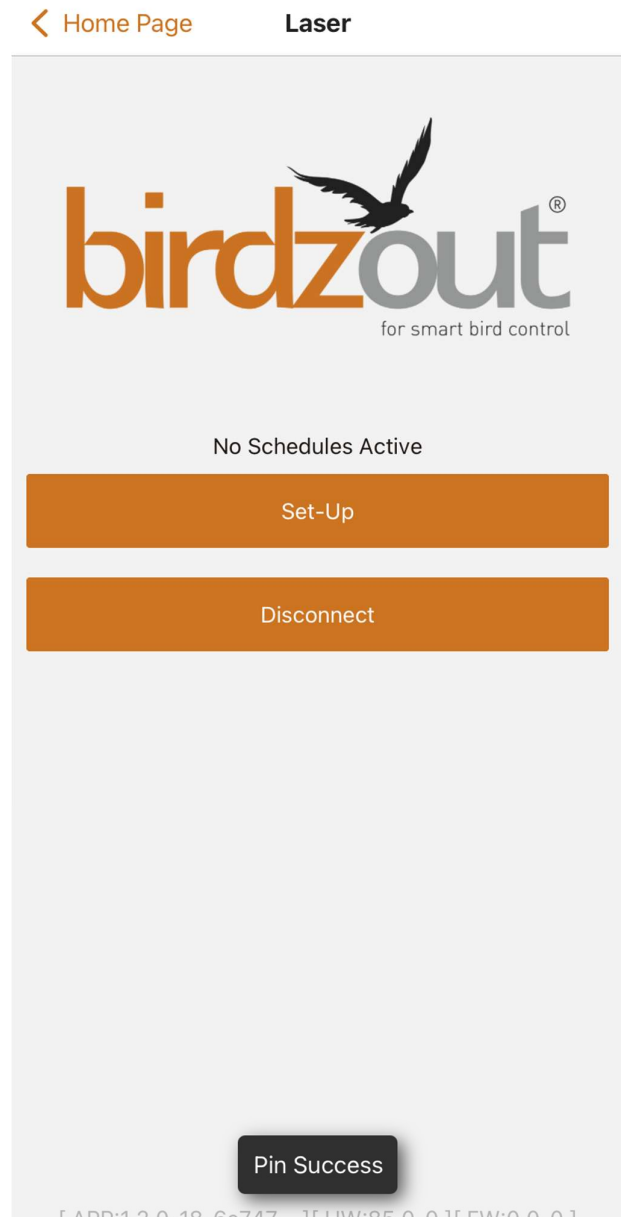


g) See 5.2. for instructions on how to set the Pincode.

Note: if the Pincode has been forgotten, there is a provision to reset this back to the default. Contact your technical consultant to find out.

h) On the Home Page, press "Setup".

If the laser is currently operating in a zone, it will display the current zone, and the current schedule on the home page

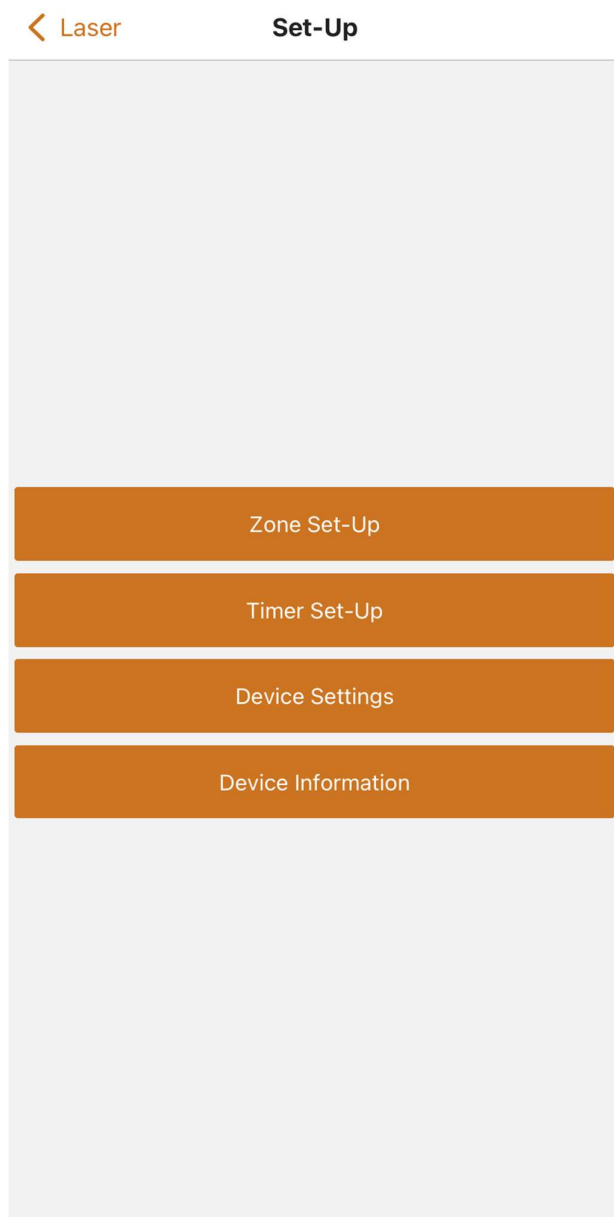


Note: it is recommended to wait until the laser has finished calibrating before accessing and changing settings.

### 4.3 Zone Setup

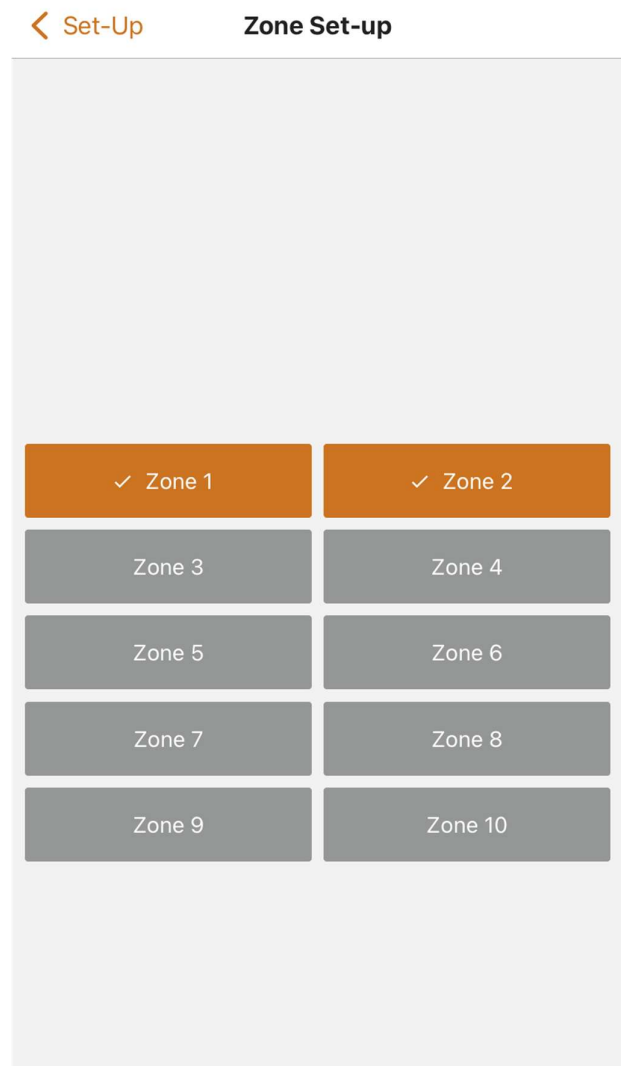
The Birdzout Auto Laser Ultimate MK2 can have up to 10 different zones set: each covering a different area or allowing different speed and beam settings to the same area.

The zones can be activated at different time slots. The Laser Beam is turned off when moving between zones.



a) On the Setup Page press “Zone Setup” this takes you to a list of 10 zones, any that have been set are coloured orange, the silver ones haven’t been set.

b) Enter the zone you wish to set.



Note: to ensure that zones are set accurately, it is recommended that the zones are set at dawn or dusk, or in low light conditions to ensure the accuracy of the points.

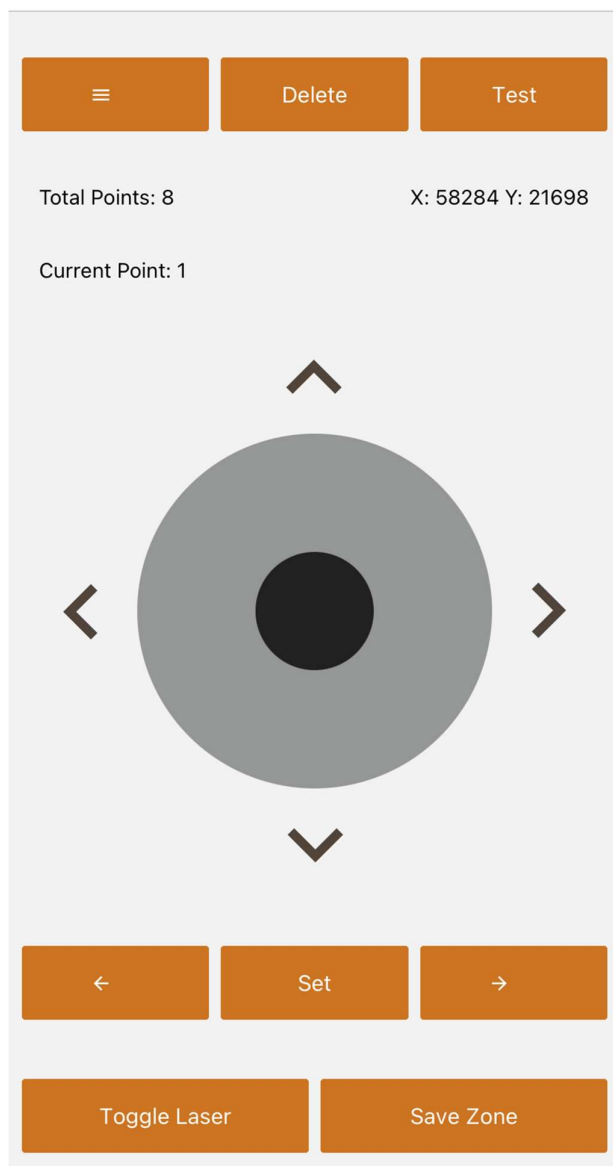
A zone requires a minimum of 3 points saved to be valid.



#### 4.4. Joystick Use / Setting Zone Points

To move the laser to the required positions for setting the points, for large movements, use the joystick. This is speed sensitive (note: if the phone screen is dirty or wet, this may interfere with joystick operation). For finer movements, press the up, down, right, and left arrows beside the joystick. (The arrow movement increment can be changed, see 5.1.)

##### < Zone Set-up Zone Settings (Zone 1)



- a) Use the joystick to move the laser from its home position to a safe area where the beam will not be shining out of the control area.
- b) Press “Toggle Laser” to turn the beam on.
- c) Using the joystick / arrows to get to the position to set the points and press set. Then press the → Arrow before setting the next point.
- d) While you are setting the points, watch the Total Point and Current Point Numbers (above joystick on the left.) Current Point is the point you will be setting, Total Points is the number of points already set. The maximum number of boundary points that can be set in one zone is 240.
- e) Once zone points have been set, press “Save Zone”.

#### 4.5. Testing Zone Points

Press the Test Button to check where the points have been set.

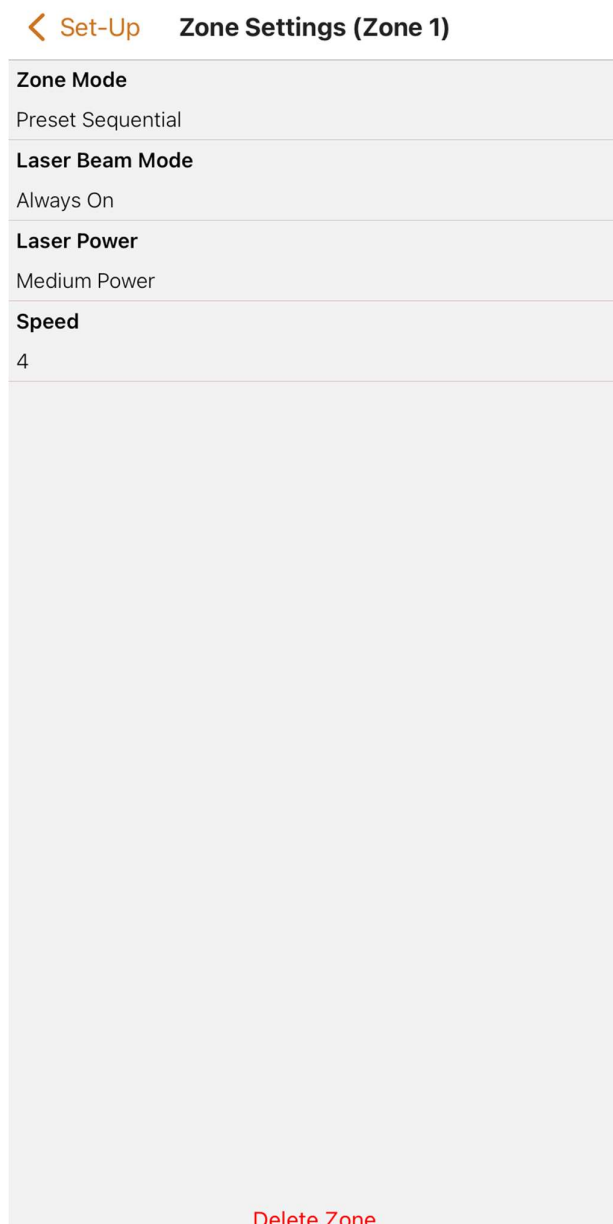
You can also use the forward and back arrows either side of the “Set” button to navigate between points, the laser beam will move between the points as the arrows are pressed. The points can then be changed or deleted if required.

#### 4.6. Changing or Deleting Zone Points

- a) To delete a point, press the “Delete” button. The Total Boundaries number will drop by 1.
- b) To change a point, move the joystick to the correct position and press “Set”.

#### 4.7. Zone Settings

To Access Zone Settings, press the Zone Settings Menu Button (Top Left)



#### 4.7.1. Zone Mode

There are 3 Zone Modes to select from

- a) Preset Sequential - in this mode the beam moves between the points you have set, in the order you have set them in.
- b) Preset Random – in this mode, the beam moves between the points you have set, in a random order. ie point 20, point 64, point 7 etc.
- c) Boundary Random – for this mode, when setting the points, set them to dictate the boundary corners of the area you wish to cover. (Note if there is a long boundary, set 1-3 points along that side as well). The laser will randomly create its own paths within the set boundary.

Note: see 8. for zone use examples

#### 4.7.2. Laser Beam Mode

This sets whether the beam is solid or flashing.

- a) “Always On” is a solid beam.
- b) “Medium Strobe” is medium speed flashing - 0.5 seconds on, 0.5 seconds off
- c) “Fast Strobe” is fast speed flashing - 0.25 seconds on, 0.25 seconds off.
- d) “Slow Strobe” is slow speed flashing - 1 second on, 1 second off.

### 4.7.3. Laser Power

This controls the strength of the laser beam.

- a) "Low Power" sets the beam output to approximately 100mW
- b) "Medium Power" sets the beam output to approximately 250mW
- c) "High Power" sets the beam output to approximately 490mW

### 4.7.4. Speed

This sets the speed the laser beam operates at.

1 = Slowest, 4 = Fastest.

For Preset Sequence and Preset Random Mode, the unit changes rotational speed to the following:  
Speed 1 = 2 Degrees / Second  
Speed 2 = 4 Degrees / Second  
Speed 3 = 8 Degrees / Second  
Speed 4 = 12 Degrees / Second

For Boundary Random Mode, the unit calculates and varies the speed depending on the estimated distance out from the laser that the beam is shining.

The Average Ground Speeds are the following:

Speed 1 = 2 metres / Second  
Speed 2 = 4 metres / Second  
Speed 3 = 8 metres / Second  
Speed 4 = 12 metres / Second

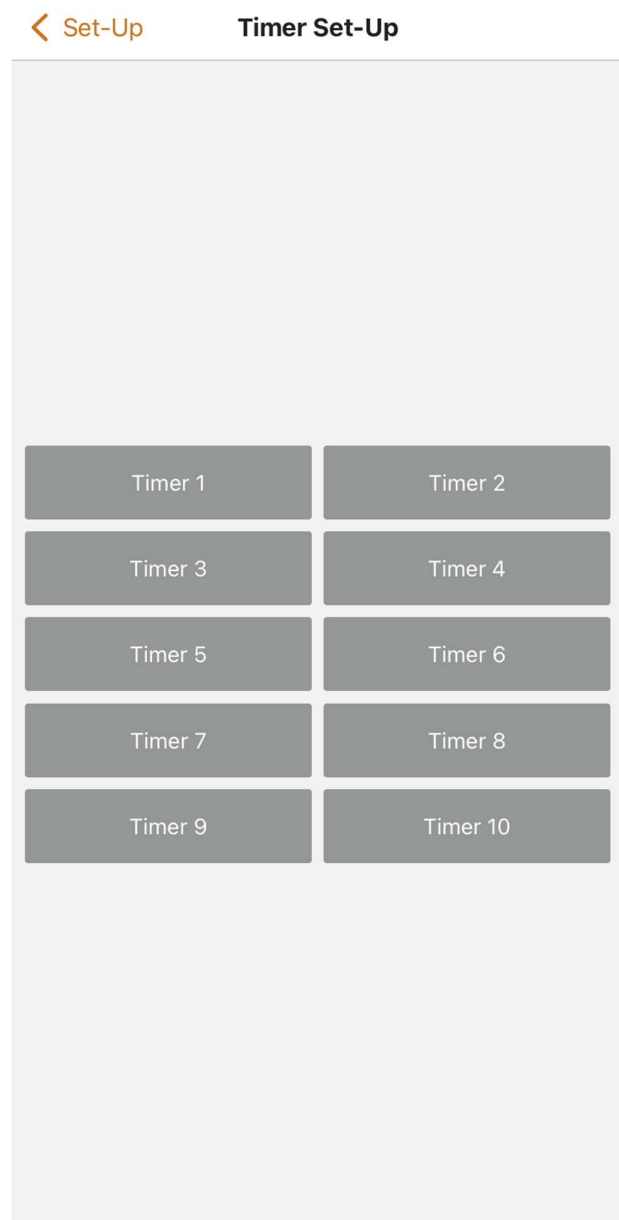
### 4.8. Deleting zones

Press the "Delete Zone" button at the bottom of the zone settings page to delete the entire zone.

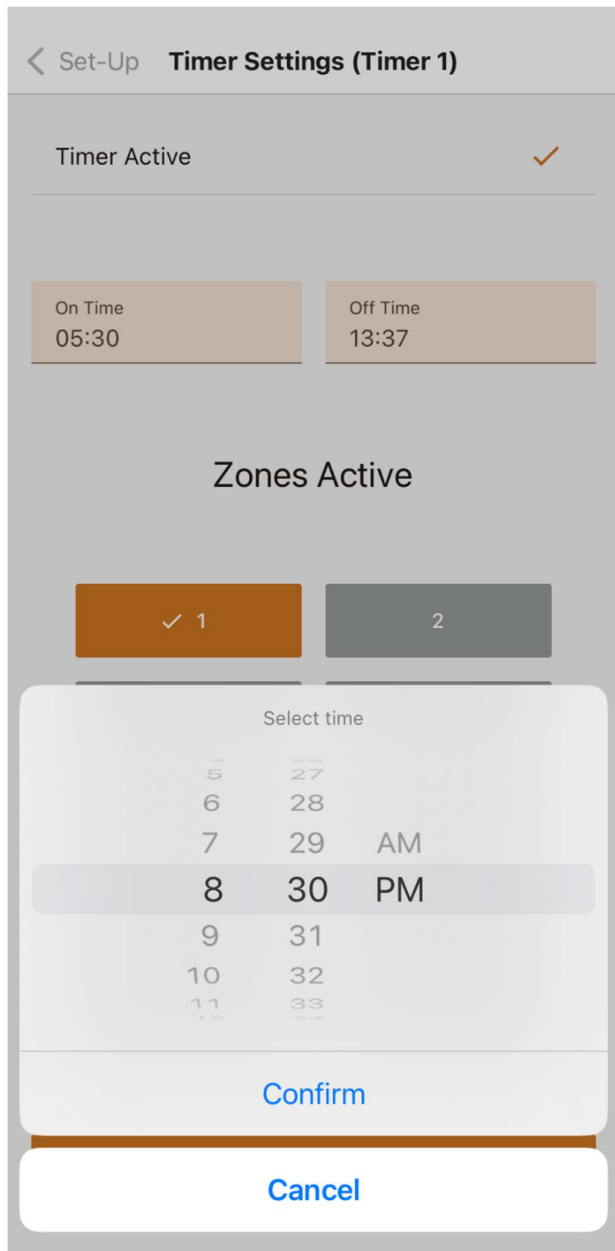
### 4.9. Timer Setup

Up to 10 different timer on/off slots can be set on the Birdzout Auto Laser Ultimate MK2. For each timer slot, you can select which Zones will operate.

- a) On the Setup Page, press "Timer Setup" a list of 10 x timers will appear, any timers that have been set show as orange, any timers not active show as silver.

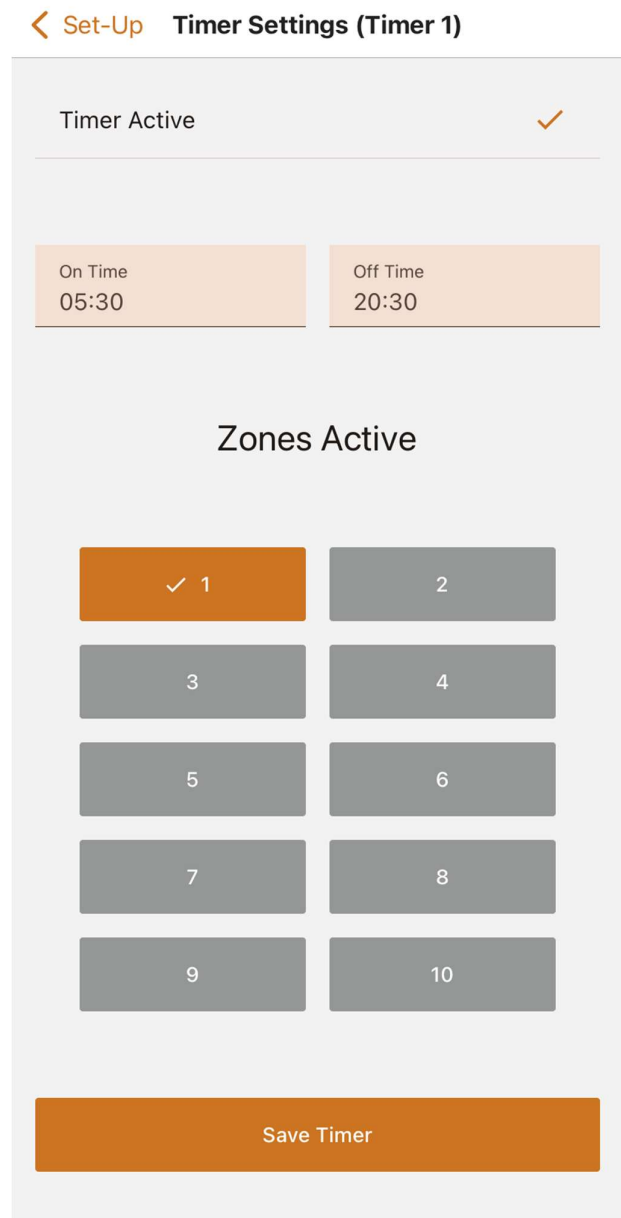


- b) Enter the timer you wish to set.
- c) Press “Timer Active” to turn the timer on. Ensure a tick appears.
- d) Set the On Time and the Off Time.



- e) Select the Zones you wish to operate in the timer slot. Zones selected show as orange, not selected show as silver.
- f) Press “Save Timer” to Save.

Note: if a zone is selected that has not been set, the timer is not valid.



In most situations it is recommended that the laser is set to turn on before dawn and turn off after dusk, so that the laser is operating before there is any bird activity and is still operating after the birds have gone to roost.

See 8. for examples on how to use various zone and timer combinations.

# 5. Device Settings

To access Device Settings, on the Set-up Page, press “Device Settings”

## 5.1. Security Code

Press the “Security” button to access the Pin Code settings Page.

To change the pin, enter the current pin, then the new pin, and confirm the new pin to save.

< Device Settings **Set Security pin**

Current Pin

[ ] [ ] [ ] [ ]

New Pin

[ ] [ ] [ ] [ ]

Confirm New Pin

[ ] [ ] [ ] [ ]

1	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
	0	✕

## 5.2. Joystick Settings

Press the “Joystick Settings” Button to access the Joystick Settings Page.

Unless advised by your technical consultant, it is recommended to mount the laser upright. In some situations, the laser can be mounted upside down, if so, change laser orientation to Upside Down.

The joystick step size changes the increment of movement per arrow press on the zone setup page. The smaller the increment the smaller the movement per arrow press.

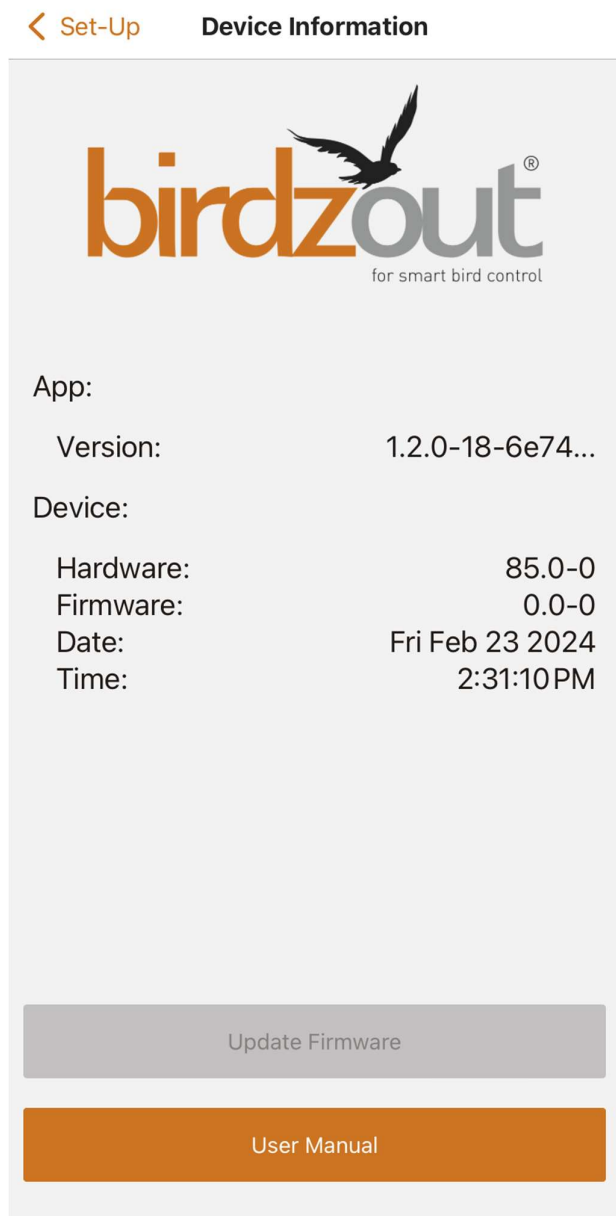
< Device Settings **JoyStick Settings**

**Laser Orientation**  
Upright

**Joystick Step Size**  
0.01 degree

## 6. Device Information

On the Set-up Page, press “Device Information” to access.



### 6.1. Firmware Updates

If a firmware update is available, the “Update Firmware” button will show orange.

### 6.2. User Manual

Press “User Manual” to access an online version of this manual.

## 7. LED Colour Guide

The LED on the Emergency Stop indicates the Status of the Laser.

- No Colour = Unit is not receiving power or battery voltage is too low.
- • • Flashing Light Blue = Unit is in Calibration Mode.
- • • Flashing Dark Blue = Bluetooth Connection is Successful.
- • • Flashing Green = Unit has calibrated and is in standby mode.
- Solid Green = Unit is operating in a zone
- • • Flashing Red / or
- • • alternating flashing blue and red (if Bluetooth connected) = Error.

If an error occurs, the unit will pause for 5 minutes then restart.

Check Zones and Timers are valid.

If an error persists, please discuss with your technical consultant: Let them know when it is going into an error mode, i.e. during calibration, after finishing a zone etc.

## 8. Examples



Zone 1 – Preset Sequence Mode. (Scan of high-pressure areas at dusk including roosting areas – dense trees) Speed 2, Solid Beam



Zone 3 & 4 - Boundary Mode. Separate Zones so the beam does not cross the driveway to the house on the south. Speed 3, Fast Pulsing Beam



Zone 2 – Preset Random Mode (points dotted around the perimeter) Speed 4, Solid Beam

The zones could also be duplicated, each with different speed or laser beam settings, that operate at different times of the day using multiple timers. I.e., Zone 5 & 6 are the same as Zone 3 & 4, but use speed 4, solid beam. Zone 3 & 4 operate from 6am to 12pm, Zone 5 & 6 operate from 12pm to 9pm.

# 9. Specifications

## Laser:

Class: 3B  
Wavelength: 520NM  
Maximum Output Power: 499mW  
Diameter at Aperture: 25mm

## Operating Specifications:

Range (from home position)  
Pan: -180° to +180°  
Tilt: -90° to +90°  
Operating Speed: 2-12°/second  
Operating Voltage: 24V  
Max Power Consumption: 2.5A at 24V

## Dimensions:

Laser: 350x250x230mm  
Case: 560x355x230mm  
Weight: 7.5kg

## Safety Features:

Laser status LED indicator  
Emergency stop with key  
Pincode access for app

## Compatible Devices:

Android: Android 6.0 or later  
iOS: iOS 13.0 or later  
Bluetooth: version 4.0 or higher

## App QR Codes:



Android



iOS

# Supplied By:

Bird Control Australia  
Phone: +61 451 284 632  
Email: [info@birdcontrolaustralia.com.au](mailto:info@birdcontrolaustralia.com.au)  
[www.birdcontrolaustralia.com.au](http://www.birdcontrolaustralia.com.au)



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