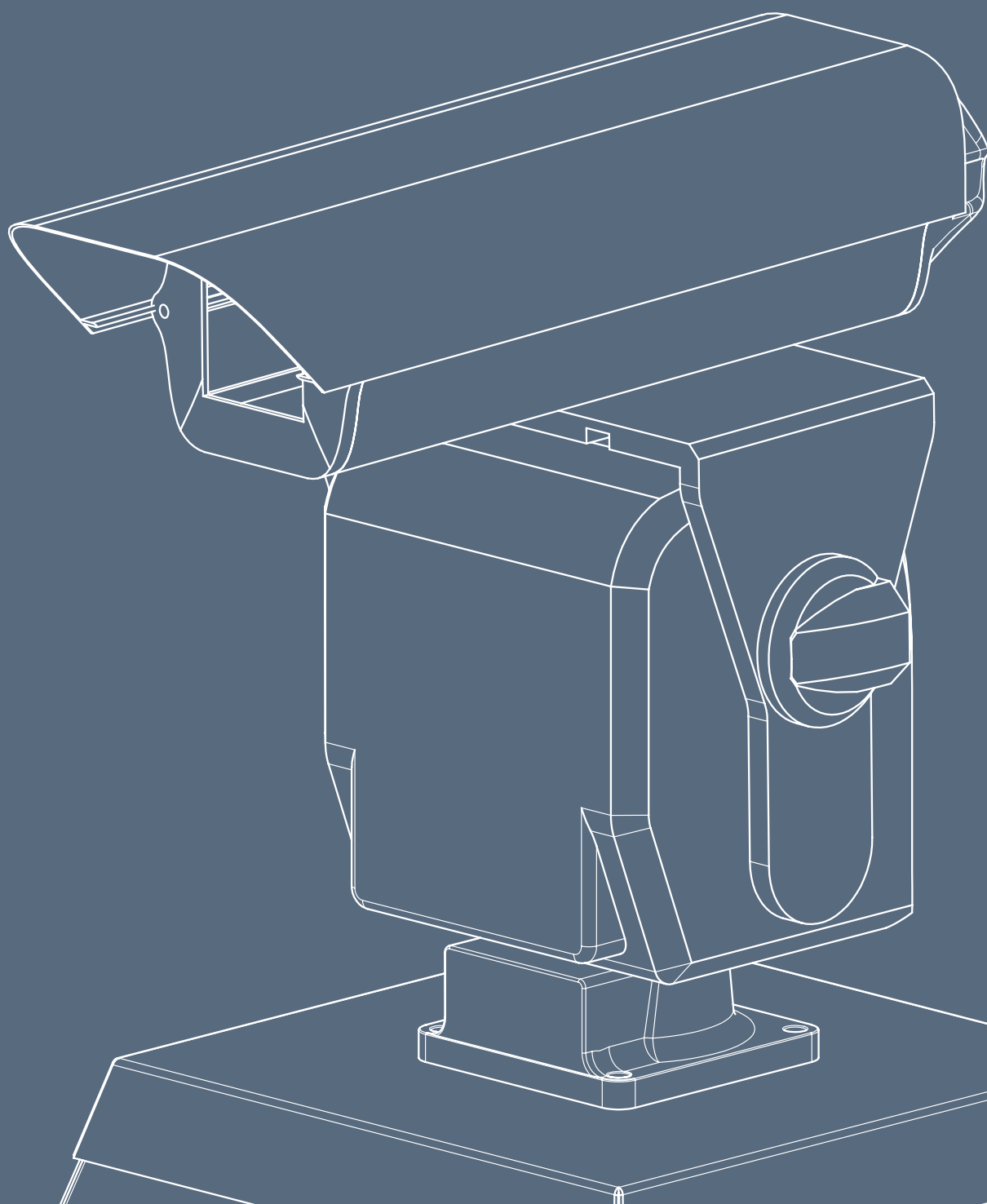




Agrilaser[®] Autonomic



Installation guide

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Agrilaser® Autonomic installation guide

This document provides the basic information needed in order to perform installation and configuration of the Agrilaser Autonomic, to enable safe and effective bird repelling.

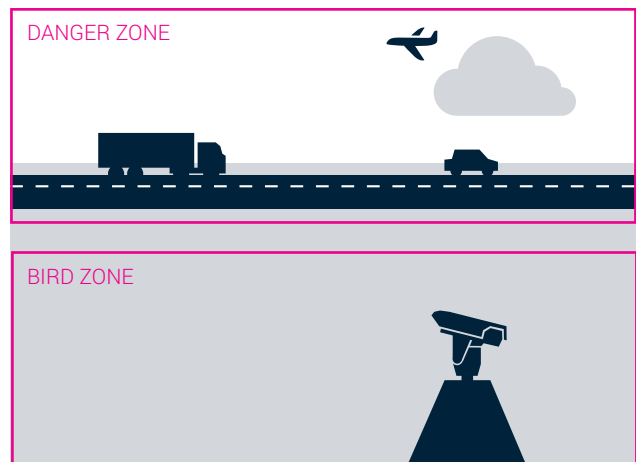
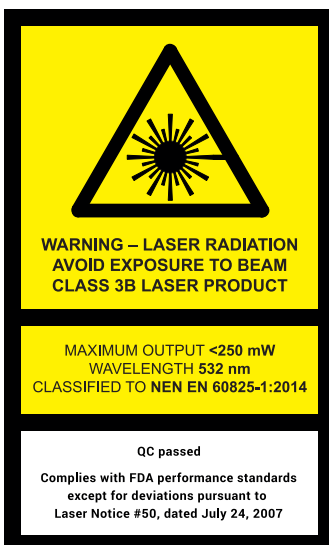
Explanation of signal words



CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage.

Bird zone: Indicates a defined area where bird nuisance is present.

Danger zone: Indicates an area in which no laser projection is allowed.



The "CE" mark indicates that this product complies with the applicable European Directives which relate to health, safety, environmental and customer protection.

1. Positioning

1.1 Positioning the Agrilaser Autonomic

Take into account the following when positioning the device:

1. Make sure the supporting frame is positioned on a **flat and level surface**.



2. Make sure the supporting frame is **firmly attached** to the ground surface.

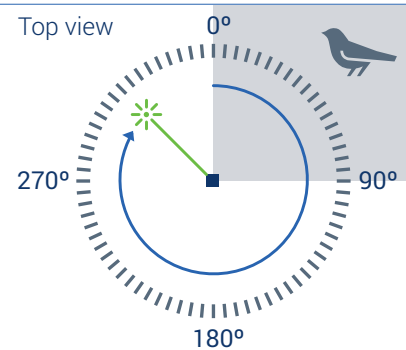
If staggering of the device should occur, reposition the device or add additional ballast to the supporting frame, if required.

3. Depending on the installation location, **apply between 20 kg (45 lb.) and 50 kg (110 lb.) of ballast to the supporting frame.**



4. At startup, the device will perform a calibration sequence. During calibration, the laser module will move to its initial position. From the initial position, the laser module can only rotate in clockwise direction.

It is recommended to position the Agrilaser Autonomic in such a way that the bird zone is concentrated within the lower pan angles, **close to the initial position**.



Positioning the largest bird zone within the device's pan range closest to the initial position results in:

- **Increased precision**

The error build-up of the motor is lowest for low pan angles with respect to initial position.

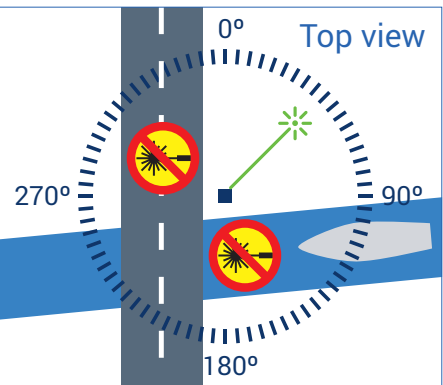
- **Reduced wear of motor components and reduced power consumption**

Fewer motor movements are required during both configuration and operation.

- **Shortened installation time**

Pan angles close to the initial position are approached faster than high pan angles with respect to the initial position.

5. The Agrilaser Autonomic may be installed close to danger zones, provided that the necessary precautions are taken. A danger zone is defined as an area in which no laser projection is allowed. Examples of danger zones are roads, waterways, pedestrian areas and commercial and residential buildings.



When the bird zone is located close to a danger zone, accidental laser projection at the danger zone can be prevented by:

Positioning the Agrilaser

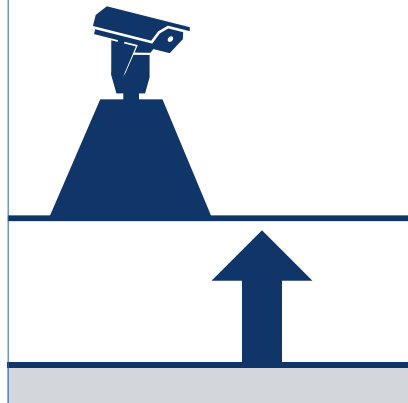
Autonomic close to the danger zone. By doing so, configuration near the danger zone occurs closer to the laser, which results in easier configuration.



Positioning the Agrilaser

Autonomic on an increased installation height with respect to the surface of the bird area.

In that way, the position of the laser projection on the area is less sensitive to backlash in the motor platform and overshoot to danger zones is less likely.

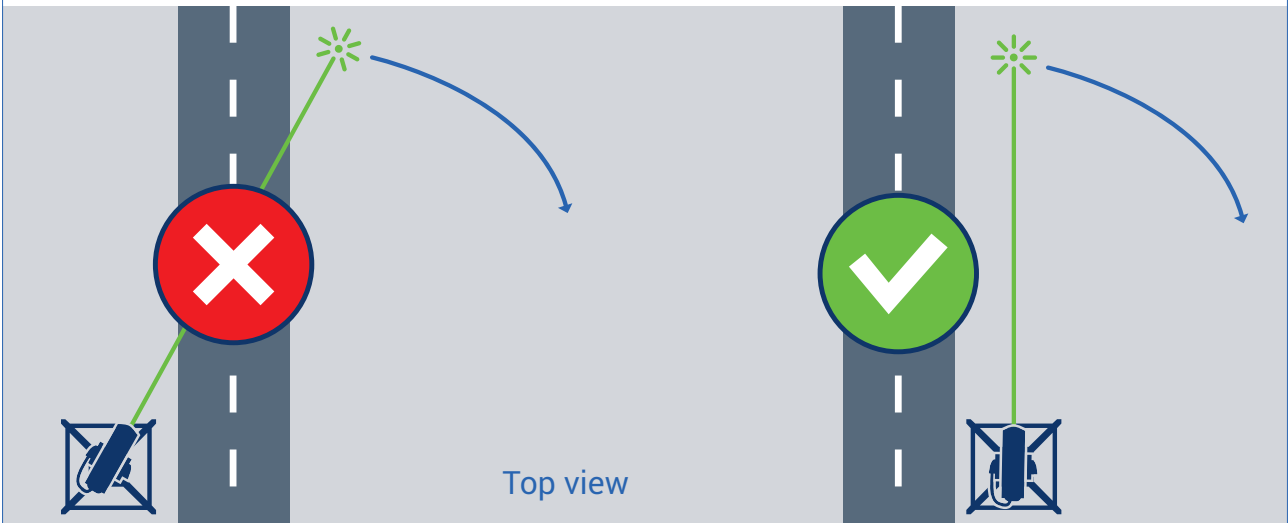


Positioning the Agrilaser

Autonomic to project away from the danger zone. In case of overshoot the laser will cover a non-danger zone.



6. Select an installation location where the laser beam does not need to cross public roads, pathways, sidewalks or parking spaces in order to cover the intended bird zone.



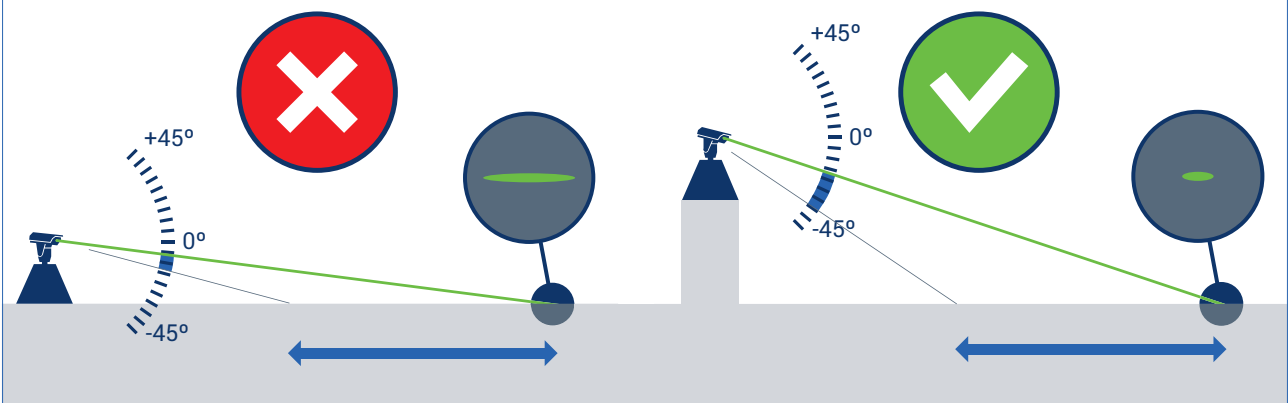
7. Where possible, position the Agrilaser Autonomic at increased height with respect to the surface of the bird zone.

Positioning the device at an increased height improves the dispersal effectiveness.

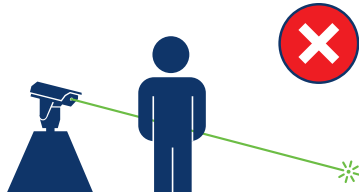
Due to the increased angle of the laser beam the spreading of the projection will be limited, thereby maintaining optimal visibility.

Positioning the device at an increased height results in improved laser accuracy.

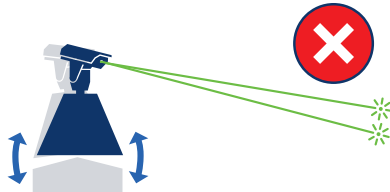
As the motor steps in tilt direction result in less deflection in the field, more accurate positioning of the laser projection is possible and the effects of potential (tilt) overshoot are less severe.



⚠ Caution: When positioning the Agrilaser Autonomic at increased height, make sure that no humans or vehicles are positioned between the device and the bird zone.



⚠ Caution: When positioning the Agrilaser Autonomic at increased height, make sure that the ground surface is sufficiently rigid and shows minimal deflections as a result of wind loads.



⚠ Caution: Once installed, the position of the Agrilaser Autonomic should not be altered. As pre-programmed patterns are based on the installation position, changing the position may lead to laser projection at danger zones.



1.2 Positioning checklist

Do's

- Read the safety instructions provided in the user manual before activating the device.
- Check if all bolts are tightly secured.
- Position the device on a horizontal and flat surface.
- Secure the frame to the ground surface or add ballast to the supporting frame to prevent displacement of the device during operation.
- Position the Agrilaser Autonomic in such a way that the most important bird area is close to the initial position of the motor.
- Position the Agrilaser Autonomic as close as possible to the danger zones.
- Where possible, position the Agrilaser Autonomic at increased height with respect to the intended bird area.

Don'ts

- Position the device on an uneven, steep or wobbly surface.
- Position the device on a surface which is subjected to subsidence or vibrations.
- Change the position of the device after configuration.

2. Configuration

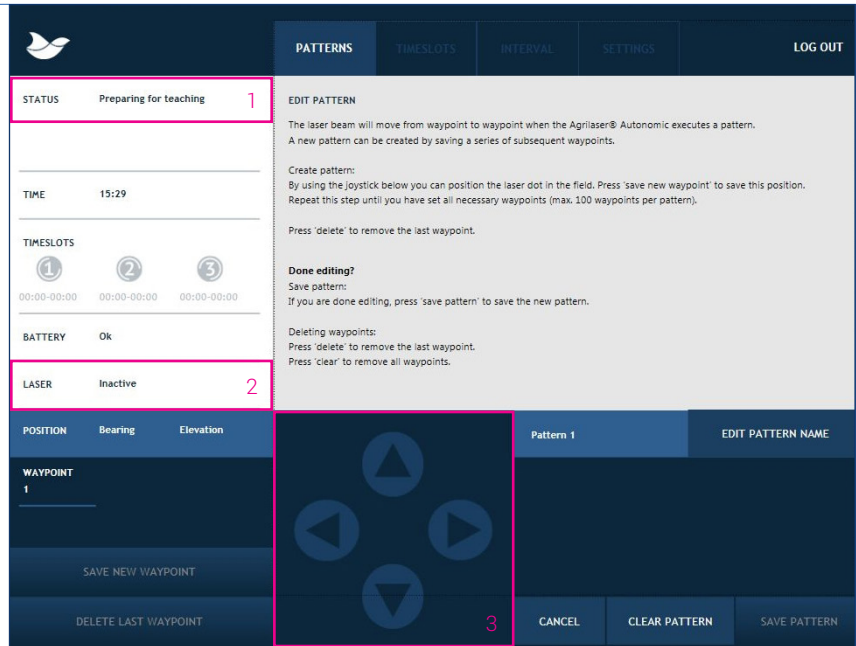
2.1 Configuration of Patterns

1. Initialization

Before setting up a pattern, a calibration sequence is performed. The status on the status panel (1) will be **'Preparing for teaching'**.

During the calibration the laser will be inactive (2). After calibration the laser can be activated.

The arrows (3) can be used to move the laser position. When calibration is completed, the arrows become active (white).

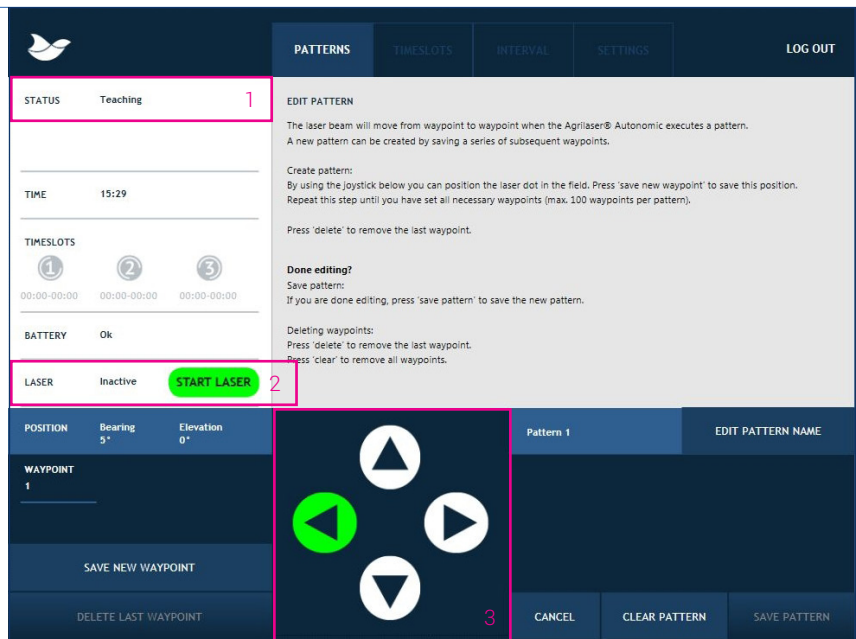


2. Position laser

After calibration, the status in the status panel (1) changes to **'TEACHING'**. Switch on the laser by pressing the **'START LASER'** button (2). It is recommended to move the laser away from danger zones before switching on the laser.

Change the laser position by clicking the white arrows (3). Moving the laser is also possible by using the arrow-keys on your keyboard.

During teaching, use the arrow-keys to move the laser across the intended bird zone. The arrow in which direction the laser module is moving, will be highlighted green (3).



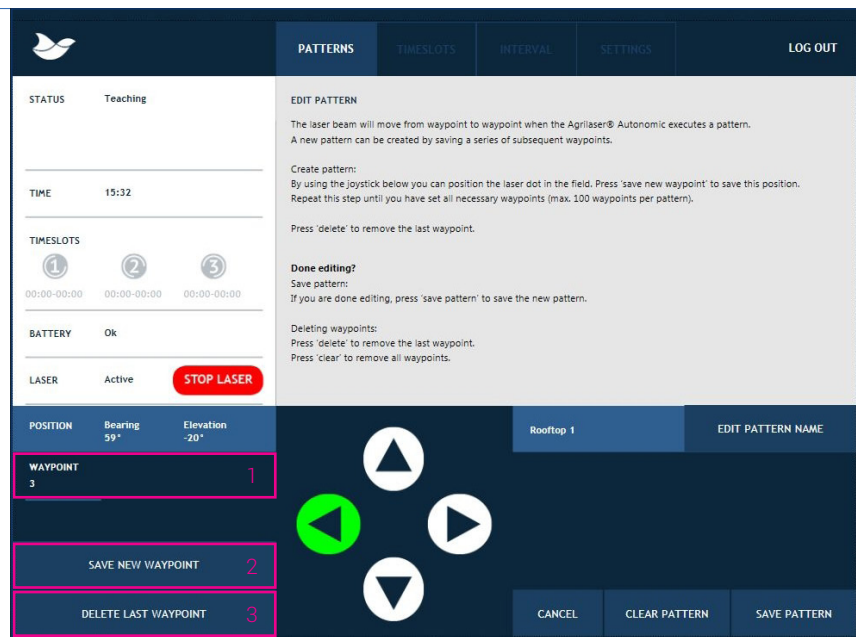
3. Create pattern

To setup a pattern, save a waypoint after every time the laser has been moved to the next desired position in the bird zone. To save a waypoint, click on **'SAVE NEW WAYPOINT'** (2) or press the enter-key on your keyboard.

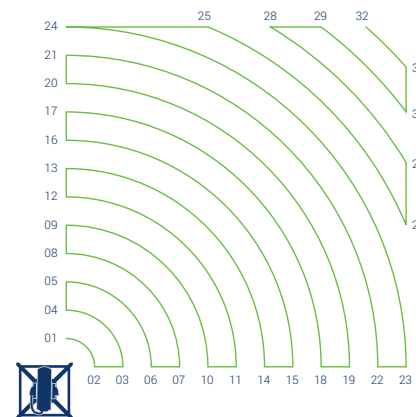
In the status bar on the left side of the screen the number of the next waypoint is shown (1). A pattern can consist of a maximum of 100 waypoints.

To undo an error, click **'DELETE LAST WAYPOINT'** (3) to delete the last saved waypoint.

The laser will return to the previously saved waypoint and configuration of the pattern can be continued.



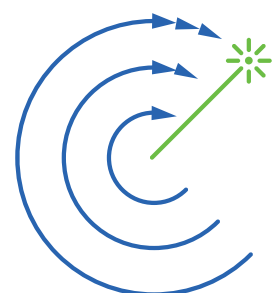
An example of a pattern is shown to the right, where 32 waypoints have been added (01 to 32) to cover the intended bird zone. During the execution of the pattern, the device will retrace the path between saved waypoints (1 -> 2, 2 -> 3, 3 -> 4, .. , 30 -> 31, 31 -> 32).



Take the following into account when setting up a pattern:

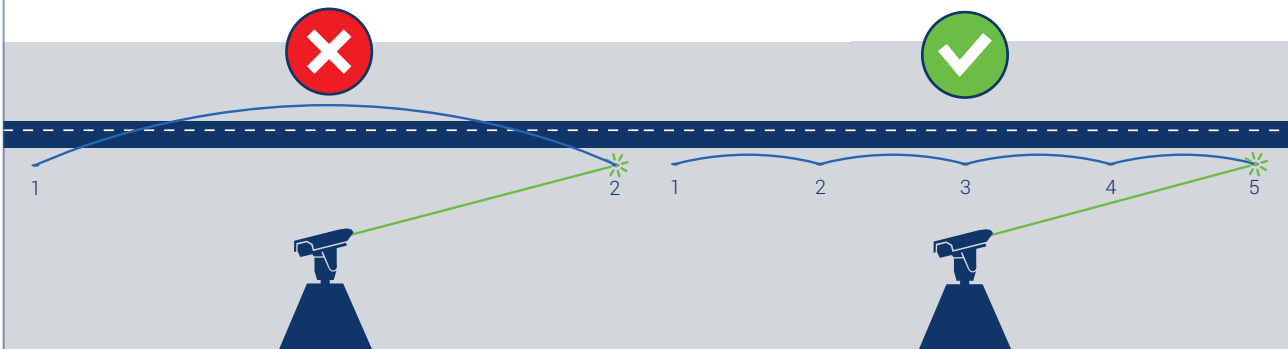
- The angular movement of the laser platform will result in higher laser projection speeds in the field when patterns are set up at a greater distance. At a certain distance (depending on device position and course of terrain) the laser will move too fast along the repelling area, thereby reducing its effectiveness. This can be avoided by selecting the appropriate laser speed in the settings menu of the Agrilaser software. If the lowest laser speed still results in laser projection speeds that are too high, it is recommended to position the device at an increased height with respect to the bird zone.

Projection speed

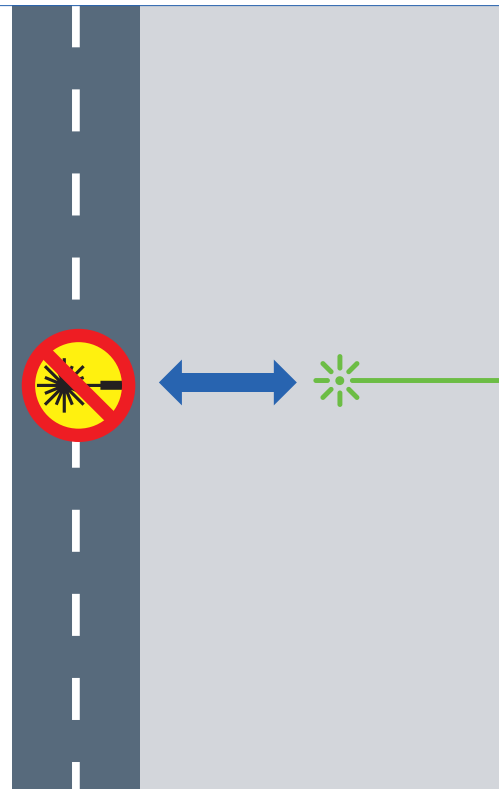


- Only configure patterns when visual feedback of the laser projection in the repelling area can be established. It is therefore not recommended to configure patterns during bright sunlight conditions, as the laser projection is usually hardly visible during these ambient conditions.
- During the execution of a pattern, the device will retrace the path between saved waypoints (i.e. A -> B, B -> C, C -> D etc.). During pattern execution, the pathway of the laser beam between waypoints may be different from the pathway as configured during pattern setup. Therefore, it is important to perform a test run of each pattern to check whether the laser is not projected at danger zones or objects other than intended.

The laser trajectory of an executed pattern can deviate from the expected trajectory during setup. It is therefore recommended to keep the distance between two subsequent waypoints as short as possible when setting up patterns close to danger zones.



- Since it is only possible to delete the last saved waypoints of a pattern, it is recommended to start with setting up 'easy' waypoints away from any danger zone, and work your way towards the most critical parts of the danger zone when creating a pattern.
- A maximum amount of 100 waypoints per pattern can be added. However, it is recommended to keep the amount of waypoints per pattern lower (e.g. 30-50), as a slight positioning error is introduced each time a waypoint is set.
- To increase the effectiveness of the Agrilaser Autonomic, it is recommended to set up at least two deviating patterns for each area. In this way birds will be approached by the laser beam in different ways, which contributes to preventing habituation.
- Always keep a safe distance from the edges of the intended bird zone.



2.2 Timeslot configuration

In most cases, the intensity of bird nuisance varies throughout the day. It is recommended to set the timeslot(s) according to the hours when bird nuisance is significant.

For example, when nuisance mainly occurs during sunrise and sunset, it is recommended to set up two timeslots: set timeslot '1' to start one hour before sunrise until one hour after sunrise, and set timeslot '2' to start one hour before sunset until one hour after sunset. With higher bird nuisance intensity, wider timeslots may be required. Since the device does not adapt to the changing times of sunrise and sunset, it may be required to setup wider timeslots or to change the timeslots on numerous occasions throughout the year.

The device does **not** automatically adapt its time settings to daylight saving time.

2.3 Configuration Checklist

Do's

- Perform a test run of each pattern after configuration.
- Set up multiple patterns to cover large bird zones.
- Always keep a safe distance from the edges of the intended bird zone when setting up a pattern.
- Set timeslots according to the distribution of bird nuisance throughout the day.
- Set the interval time according to the intensity of bird nuisance.
- Press the '**START**'-button after configuration in order to initiate autonomous operation.
- Press the '**LOGOUT**'-button before disconnecting the Agrilaser Autonomic.

Don'ts

- When possible, do not configure patterns during bright light conditions.
- Project the laser beam on other areas than intended.
- Project the laser beam on humans, vehicles or danger zones.



Agrilaser® Autonomic

Agrilaser® **Autonomic** is a product of Bird Control Group.

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