



2020

FISHGUN D2 USER GUIDE



Congratulations, you have just acquired a FISHGUN D2, which we hope will bring you entire satisfaction. This user manual will help you get the most out of your FISHGUN.

The FISHGUN D2 is a semi-automatic dry feed dispenser specially developed for aquatic facilities and aquaculture nurseries.

PLANKTOVIE

Marseille

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I. Description

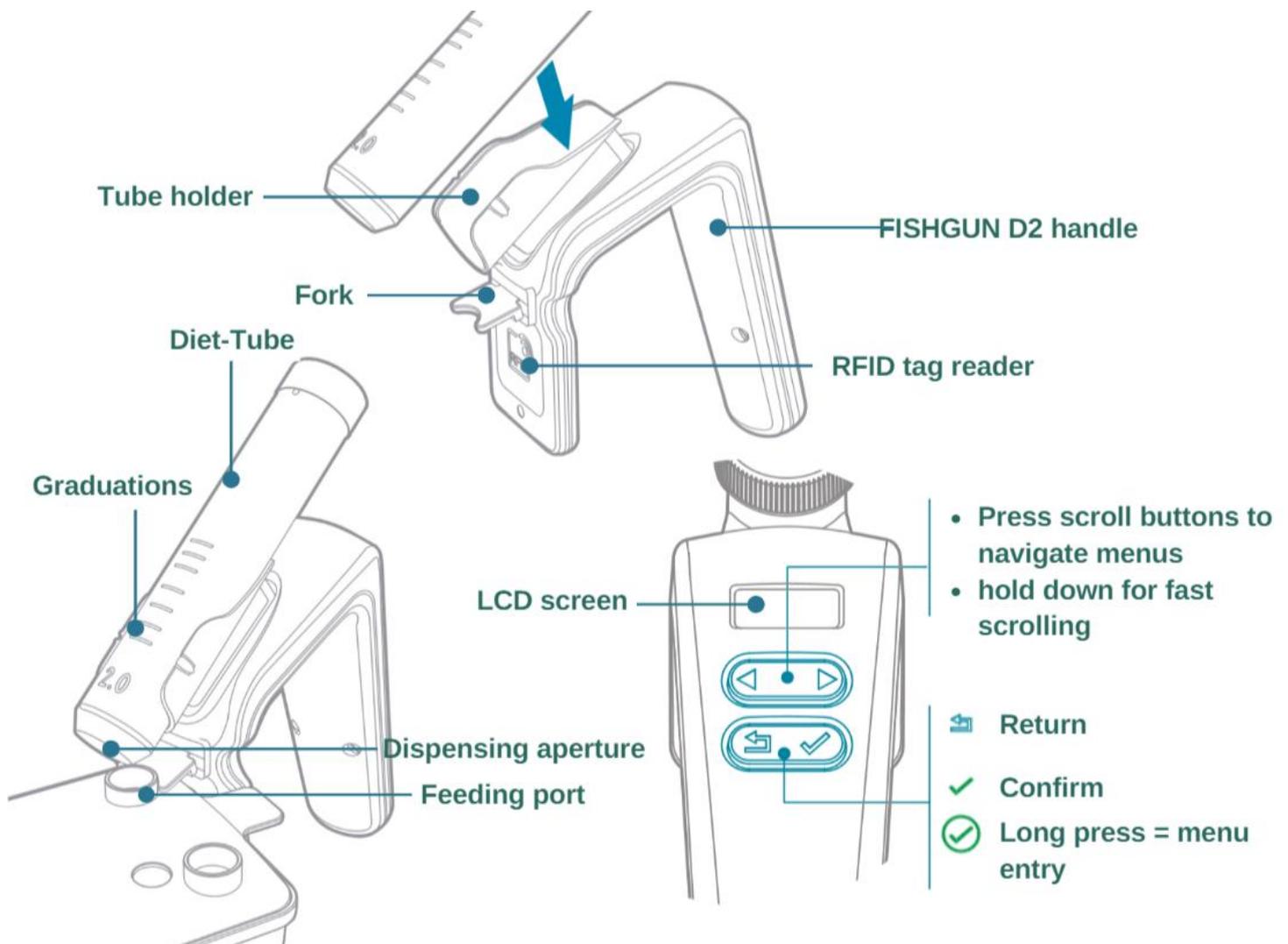
1.1. Components

- An ergonomic handle for easy and effortless use
- A digital screen for better control of operations,
- A technological system to deliver dry feed (powders, grains, etc.) by means of vibrations,
- Interchangeable 75 ml Diet-tube for different types and sizes of dry food ranging from 75 μm to 600 μm ,
- An induction charger for better security and robustness,
- An RFID scanner to identify aquariums and deliver the right amount of feed to zebrafish.

Weight: 0.5kg

Brand: Planktovie

1.2. Descriptive schemes:



II. Navigation and programming

Before using your FISHGUN, the battery must be charged to a voltage of at least 3000 mV.

2.1. Choosing a mode of use

Press any button to activate the FISHGUN, then use the scroll buttons (< >) to view the 3 operating modes:

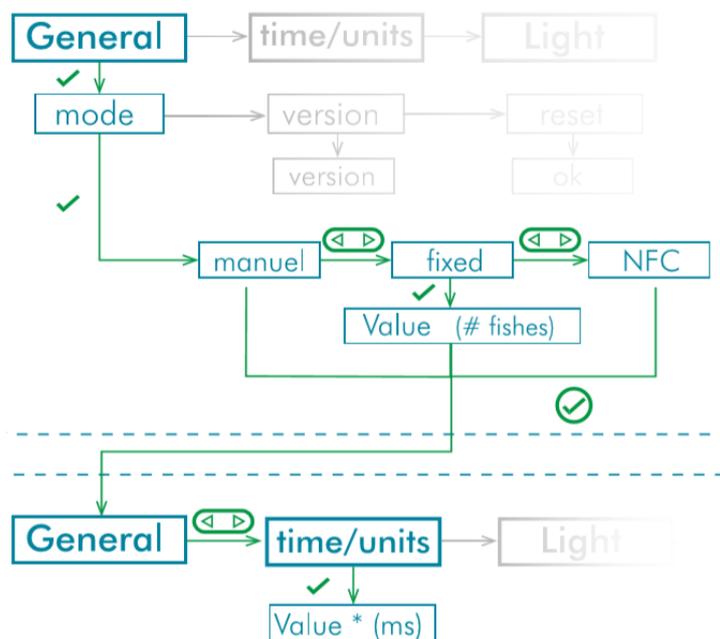
- Manual
- Fixed, this mode
- RFID (automatic)

2.2. Selecting a menu

To select the menu, press the ✓ button > 2 seconds. Press either scroll arrow to view the menus "general", "time per dose", "battery", "sleep", "light".

Press the ✓ button to confirm your choice.

2.2.1. General menu



Once the general menu is selected, use the buttons to navigate to the mode you wish to modify, then press the ✓ button to confirm your choice.

2.2.1.1. Fixed mode

When fixed mode is selected, enter the number of individuals to feed. While operating in Fixed mode, the FISHGUN D2 will always deliver the same amount of feed for the specified number of individuals.

2.2.1.2. Time per dose

This mode allows you to enter the vibration (dosing) time of the FISHGUN D2, in order to deliver feed for each individual tank. The time is entered in milliseconds (ms), so the FISHGUN D2 will deliver the amount of feed needed (shown in the table below). It then becomes possible to know how long the FISHGUN D2 should vibrate for each individual to feed. For the total amount of feed to be distributed, refer to the summary table on our website: <https://planktovie.biz/en/protocols/nutritional-solutions/> Then divide the total quantity of feed to be distributed per individual, per feeding, by the value from Table 1 below, and enter this value as the vibration time.

TABLE 1: Quantity of feed delivered each ms

| Dry feed size (µm) | 75 | 150 | 300 | 500 |
|--------------------|-------|-------|-------|-------|
| Hole diameter (mm) | 2 | 2 | 2,4 | 2,4 |
| (mg)/ms | 0,018 | 0,051 | 0,081 | 0,096 |

Note 1: For more precision, it is preferable to quantify, for each Diet-Tube, the amount of food that will be delivered each ms of vibration.

Note 2: Each Diet-Tube must be replaced after 6 months of use, thus guaranteeing the values shown in the table.

This new version of the Fishgun makes it possible to use very fine grain sizes (75 µm) without affecting the accuracy at which zebrafish are fed. Thus, the coefficient of variation is less than 20% for a 75 µm grain size. More details in table 2 below.

TABLE 2: Coefficient of variation for different feed size

| Grains size (µm) | Hole diameter (mm) | Quantity dispensed (mg/ms) | variation ratio (%) |
|------------------|--------------------|----------------------------|---------------------|
| 75 | 2 | 0,018 | 19 |
| 150 | 2 | 0,051 | 18 |
| 300 | 2,4 | 0,081 | 9 |
| 500 | 2,4 | 0,096 | 5 |

Example 1: Feeding adult fish.

Typically, one adult zebrafish (*Danio rerio*) should receive 30 mg of GEMMA Micro 500 each day. To dispense this, amount the FISHGUN D2 should vibrate for $30 : 0.096 = 312$ ms. Enter this value in the "Time per unit" of FISHGUN D2.

Example 2: Feeding post-larvae (30 days post-fertilization).

If a zebrafish (*Danio rerio*) post-larva is to receive 7 mg of GEMMA Micro 300 each day, the FISHGUN D2 should vibrate for $7 : 0.081 = 86$ ms to dispense this amount. Enter this value in the "Time per unit" of FISHGUN D2.

2.2.3. Battery

This submenu allows you to view the remaining battery voltage by selecting "Voltage". Select "Low th." (voltage threshold) to enter a value (in mv) below which the low battery symbol will be displayed on the LCD screen. By default, this value is set to 3000 mv, which corresponds to the minimum voltage ensuring optimal accuracy of the FISHGUN D2.

2.2.4. Sleep

Scroll to "Delay" to enter the idle time (min) after which the FISHGUN D2 will enter sleep mode.

Turn off the FISHGUN D2 by scrolling to "Enter" and pressing ✓ to confirm.

2.2.5. Light

This submenu allows you to set the color ("Color") and intensity ("Delivery") of the indicator light at the front of the FISHGUN D2, that confirms each delivery of feed. When the "Color" submenu is selected, these choices are available: Red, Magenta, Yellow, White, Blue, Green, Cyan, or None.

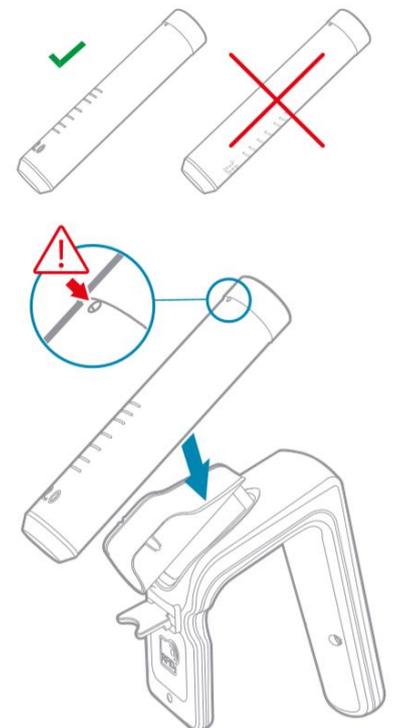
In the "delivery" sub-menu, you can choose the intensity of a value of 1-100%.

III. Installation of the tube

Remove the cap on the bottom of the tube and position the filled tube on the tube holder, taking care to place the graduations upward so that the dispensing aperture points downward.

Note: The Diet-Tube has a hole in the tube cap, so it is best not to seal the tube cap completely during the use so that this hole is always visible to allow air to enter the tube.

WARNING: Diet-Tubes are not autoclavable, use other methods such as alcohol for sterilization.



IV. Docking to the fish tank

Position the FISHGUN D2 dispensing aperture over the aquarium's feeding port, making sure to place the triggering fork on the feeding port.

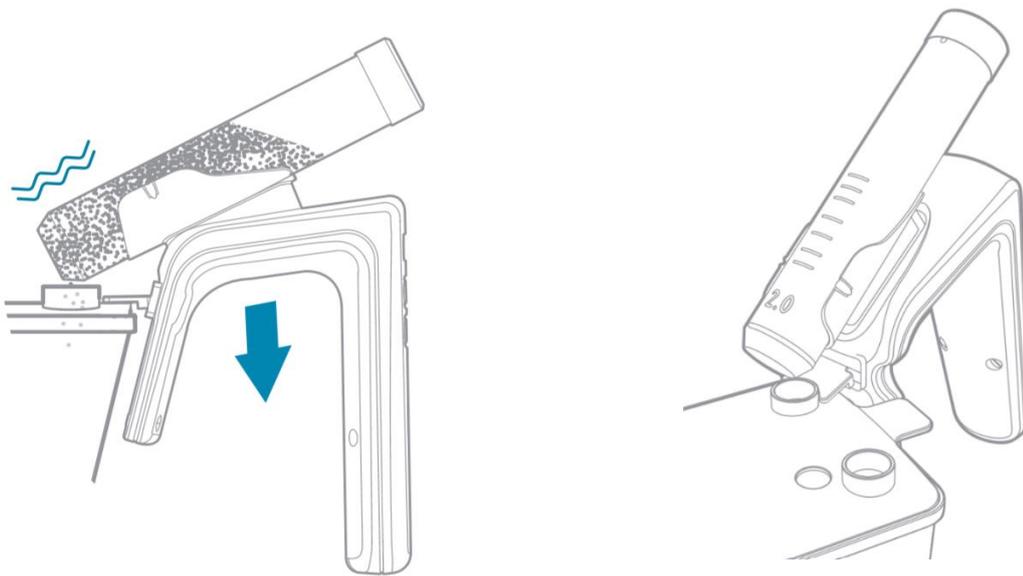
The schemas below use a Techniplast aquarium as an example.

However, this new **version of the Fishgun makes it possible to use it with any type of aquarium** (Aquaneering, Pentair, Techniplast).

A brand-new tube sliding system is now available so that the hole through which the feed flows coincides with the hole on the aquarium cover regardless of the brand. This tube sliding system consists of detent marks on the tube and a metal lug on the tube holder. With the help of the visual markings, you can easily slide the tube so that the notch locks the tube in the correct position for the type of aquarium you have.

You can thus adjust the length of the diet-tube according to the type of aquarium you own. Here is a table (table 3) of the most common brands, and the position of the corresponding notch.

For optimal reading of the RFID code, it is important to position the RFID antenna on the front of the FISHGUN D2 close to the NFC tag.



NOTE: for the Aquaneering aquariums specifically, we provide RFID tag supports allowing to certify the reading of the RFID tag by the scanner of the Fishgun. If you have this type of aquarium whose frontage where the RFID tag must be stuck is in bias, it is necessary to position a support of the tag so that the scanner is perfectly in front of the chip during the reading. These tag holders are available on our website, and five units are available for purchase of a Fishgun D2.

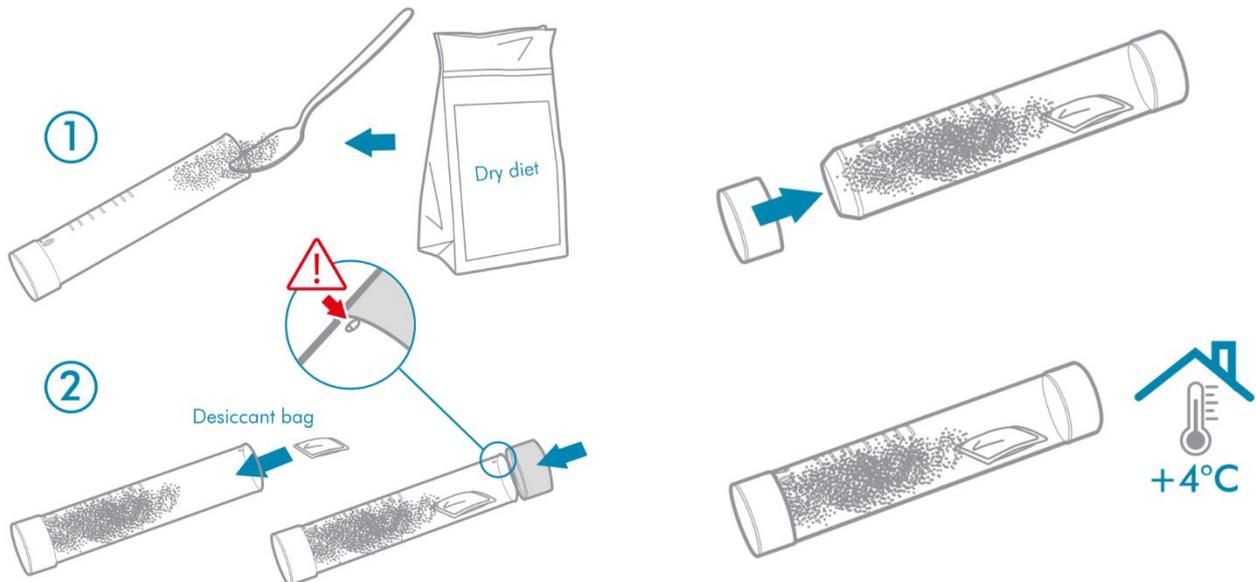
Table 3 : The notching level for each aquarium

Position 1 = position closest to the dispensing port

| Notching position | Tank volume | Tank brands |
|-------------------|-------------|-------------|
| 1 | All volumes | Techniplast |
| 2 | All volumes | Pentair |
| 2 | 0,8 L | Aquaneering |
| 3 | | |
| 4 | 1,8 L & 6 L | Aquaneering |
| 5 | 2,8 L | Aquaneering |
| 6 & 7 | 9,5 L | Aquaneering |

V. Filling the tube

Refer to Table 1 above to determine which tube to use according to the size of the feed micro pellets.



Fill the tube using a spatula or other clean and dry tool. We recommend adding a small desiccant pouch above the feed to keep it dry, in order to prevent clogging, microbial growth, and to retard oxidation.

After use, replace the cap on the conical bottom of the tube, and store it at $+4^{\circ}\text{C}$.

VI. Programming the NFC tag

For programming NFC tags, two solutions are possible for you:

- 1/ Planktovie solution: Using an NFC reader/writer available on Planktovie's website
- 2/ Using a cell phone or tablet and downloading the NFC Tools app

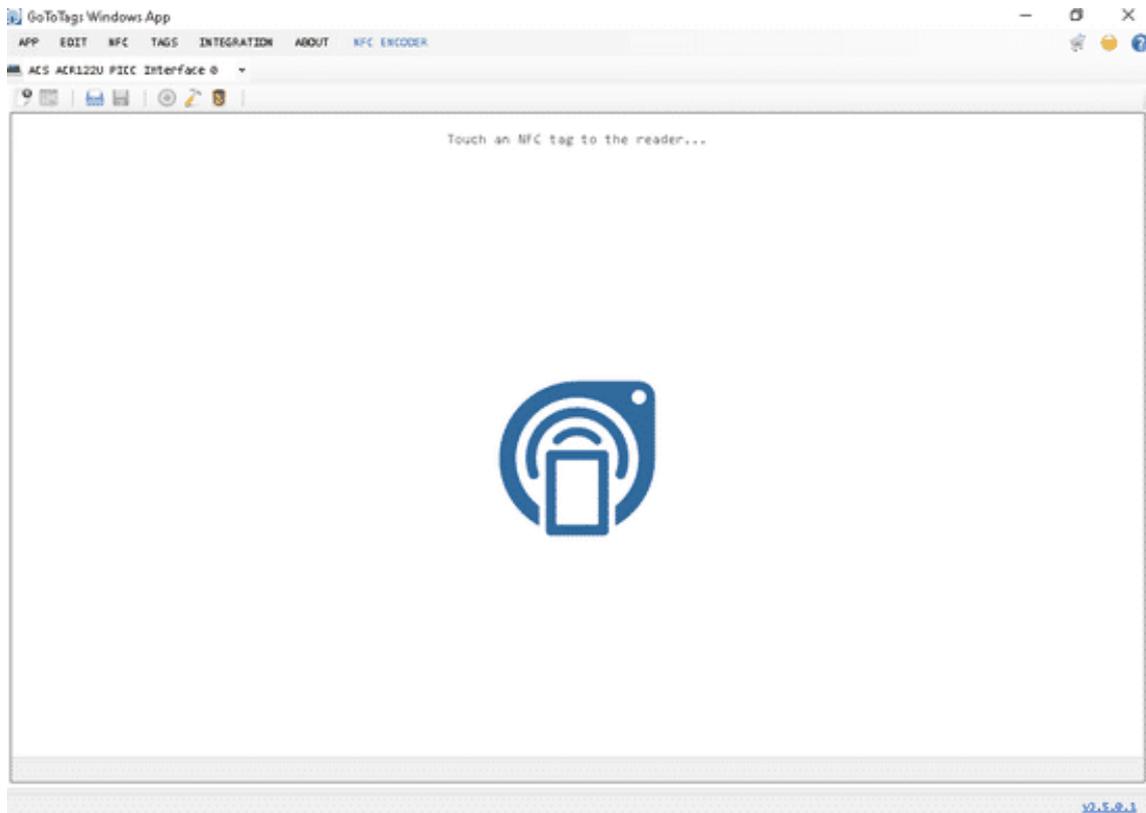
6.1. NFC Reader/writer

Planktovie offers the possibility to use an NFC reader/writer available on its website: <https://planktovie.biz/en/product/nfc-reader-encoder/>

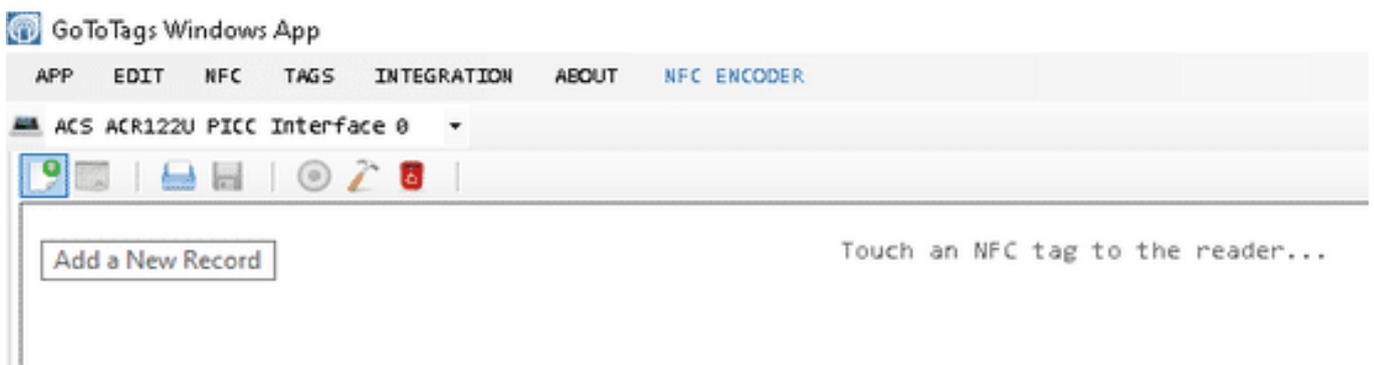
Please follow these few steps for using properly your NFC reader/writer

1. Download and install the free software "Gototags" available at the following link: <https://gototags.com/windows-app/download/>
2. Connect your NFC reader/writer via USB to your computer and launch the Gototags software.

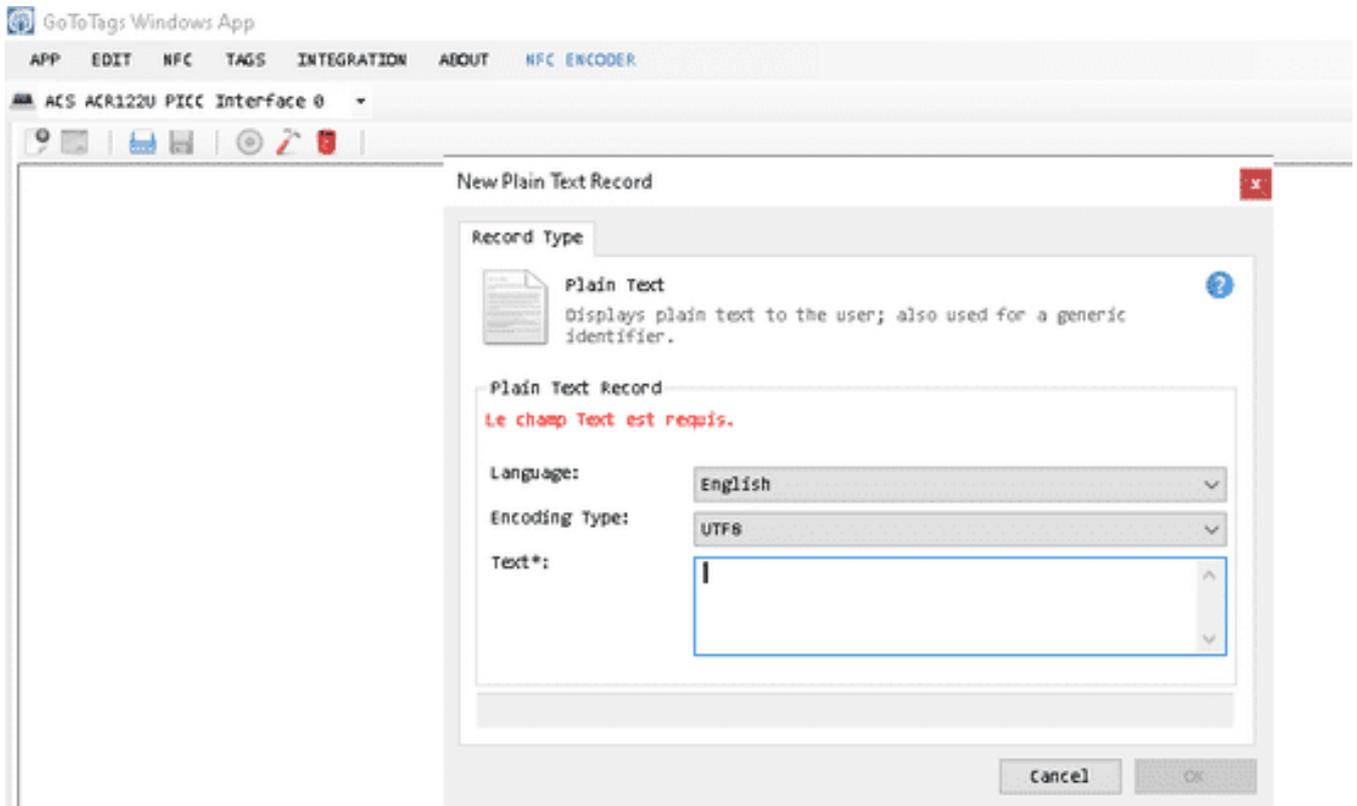
3. The following software window opens:



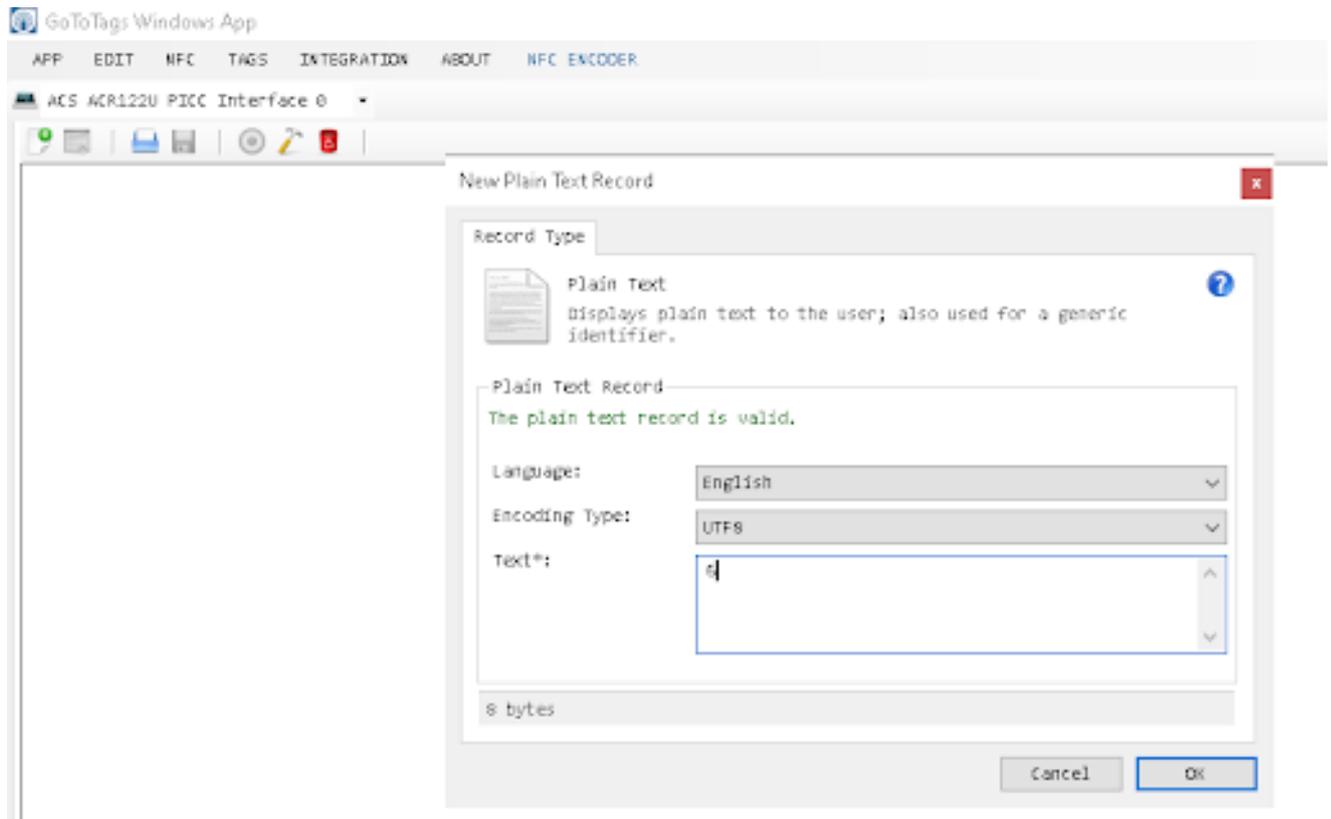
4. Program a tag by entering the "Add a New Record" icon: Then enter the "Plain text" submenu.



5. Enter in the text box, the number of fish you want to encode on the NFC tag.

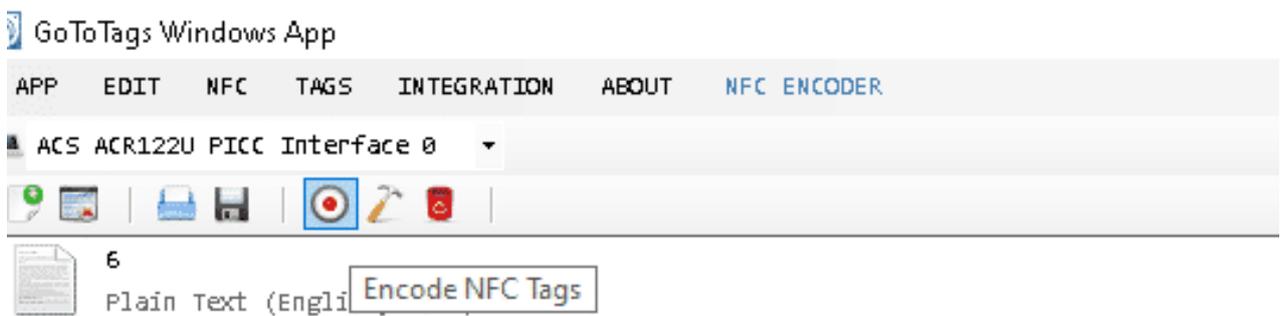


6. Wait until the software validates the new data, then press OK.



7. Then, the text data is saved in the box.

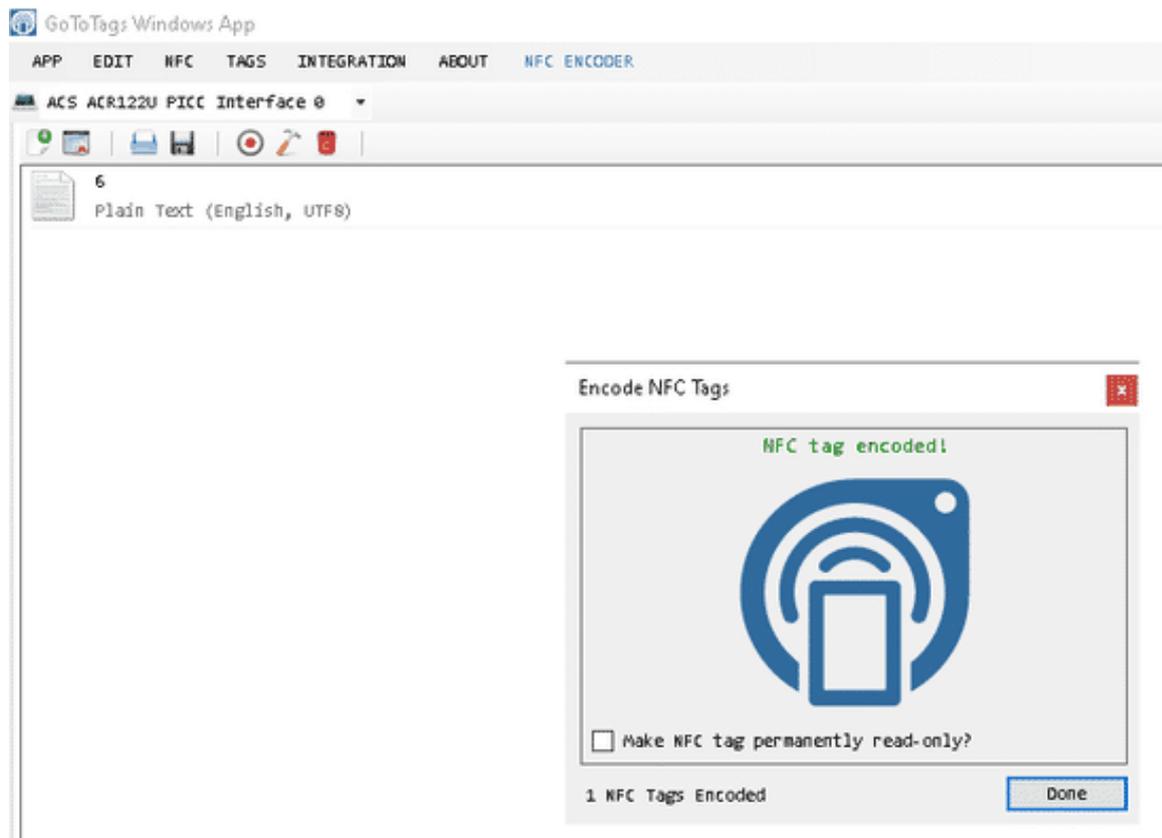
8. Click on the "Encode NFC Tags" icon.



9. A window opens, affix a blank NFC tag to the NFC reader/writer.

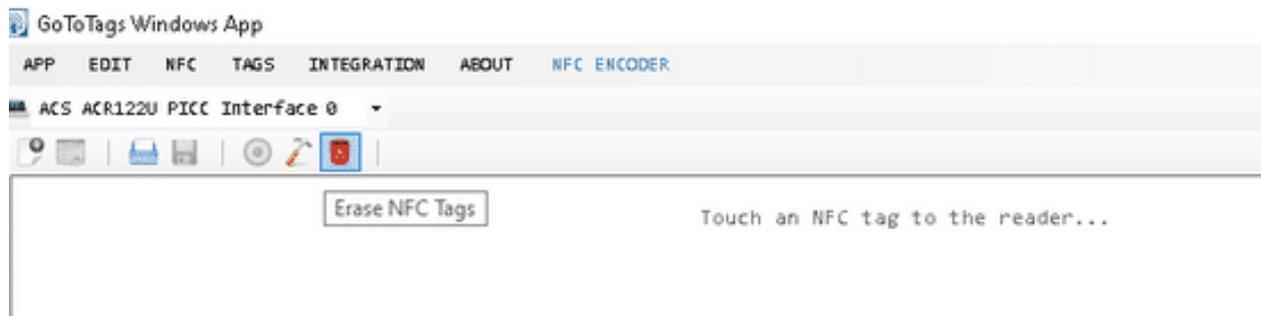


10. Wait until the software confirms that the NFC tag is properly encoded.



Your NFC tag is now ready for reading by the FISHGUN. For encoding a new blank NFC tag with the same number, proceed to step 9. Otherwise, you only need to erase the data entered in the box using the "Clear all records" icon.

To erase the encoded content on an NFC tag, click on the red trash icon "Erase NFC Tags".



Then as for writing, a window will open. Affix the tag to deprogram on the box and wait until the software confirms the deprogramming.

6.2. The NFC Tools app

[Download the NFC Tools](#)

Compatible phones for reading RFID tags

After having downloaded the NFC tools application available on Apple store or Wak Dev website (<https://www.wakdev.com/apps/nfc-tools-pc-mac.html>) you will be able to use your cell phone, or any other compatible device for writing and reading your NFC tags. Devices equipped with NFC are, for example, Android, BlackBerry, Windows Phones, etc. All compatible phones are listed on the NFCWorld website (<https://www.nfcw.com/nfc-phones-list/>).

On Android devices, the NFC function is activated in the "Wireless and networks" settings, on the BlackBerry in the "Manage connections" section. On Windows Phones, the function is already activated but may be deactivated in the "Touch + Send" settings.

Apple devices contain a low-power Bluetooth 4.0 contactless technology (BLE - Bluetooth Low Energy) introduced on iOS7 with the iBeacon system, that allows ranges greater than the NFC (up to 50 m) and hands-free use. To read RFID tags a minimum IOS 11 version is required, compatible with iPhones 7 or higher.

VIII. Warranty

We warranty your product against any defects in material and workmanship, under normal conditions of use. In the event a product is found to be defective during the one-year warranty period, we repair or replace the defective product, at our option. The warranty period begins on the day of purchase. For validation of the warranty, proof of purchase must be provided.

The following are excluded from the warranty:

1. Incorrect use of the device causing a malfunction.
2. the device is repaired or modified by an unauthorized person.
3. Damage affected by a disaster.
4. Poor maintenance causing damage.
5. Use of reagent or sample causing corrosion; 6. Accidental damage or overload.
7. Consumables such as NFC tag, etc.

To obtain warranty support, you may contact our local technical support. Our technical support will attempt to diagnose and correct the problem. If the problem cannot be rectified, our technical support will ask you to return the product. You will be asked to furnish proof of purchase to confirm that the product is still under warranty.

IX. Maintenance

Replace conical tubes about every 12 months of use for a mid-size zebrafish facility 10,000 fish.

X. Security

To avoid danger, you should observe the following rules:

- If you find any visible damage, please do not switch on
- Be sure not to expose the FISHGUN to any acid, alkali, or volatile solvents
- Temperature changes or mechanical wear may increase the dosing volume error.

You must stop any operation immediately if the equipment is damaged. The equipment may be damaged when the following situations occur:

- There is visual damage.
- The product suddenly does not work.

XI. Troubleshooting

| Symptoms | Possible causes | Solution |
|---|--|---|
| Feed does not flow, or not regularly. | Feed can clog when its water content reaches a certain threshold, making flow irregular. | Change the feed; keep a pouch of dry desiccant in the tube. |
| RFID reading is not performed correctly. | Incorrect positioning of the FISHGUN D2. | Position the RFID antenna parallel to the aquarium. Be sure to place the RFID tag just under the feeding port, so it can be read by the RFID antenna. |
| The dispensing aperture of the Diet-tube is enlarged. | About every 6 months, the feed inside the tube creates a corrosive effect and damages the orifice. | Replace the Diet-tube. |

XII. Specifications

Model: FISHGUN-D2; vibrator: Z7AL2B1692082

Typical drilled tube life: About 6 months of use for a typical facility of 10 000 fish.

Adapter:

- input: AC 100-240V 50-60Hz 1.0A max
- output: DC 12V 1A; DC24V 1.9A

Power supply: 12W

Coefficient of variation: < 10% from 75 to 600µm

Working environment: temperature 0-70°C

Storage environment:

- humidity : 10%-90% (non-condensable)
- temperature : -20°C-85°C

Dimensions (L x W x H): 12.5 x 5.5 x 16 cm / Weight: 222 g