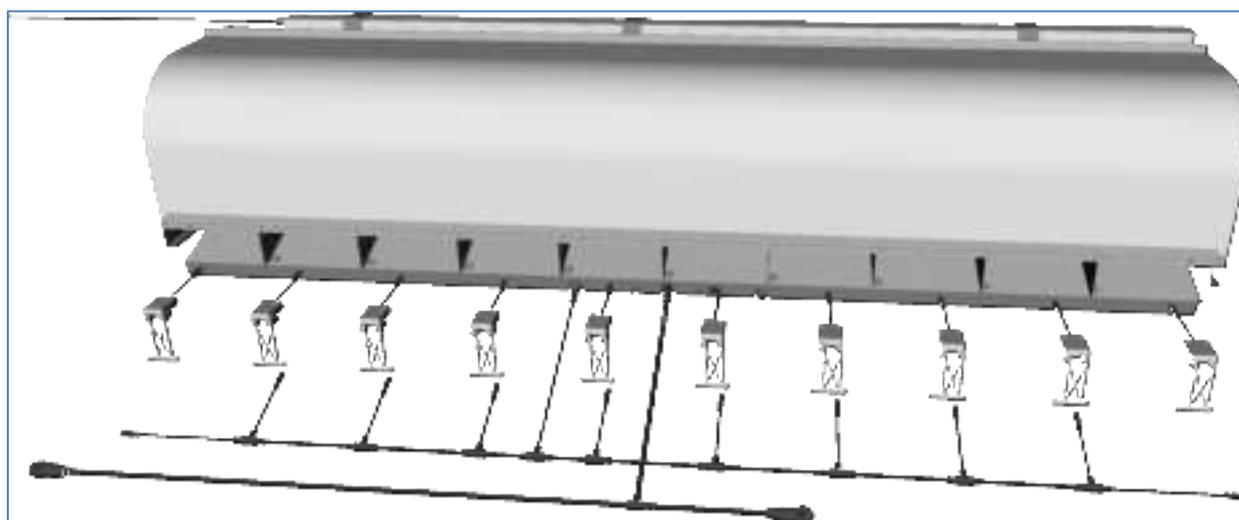




# 10 Nests RFID reader Solution

## User Manual



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|  | <b>User Manual</b><br><b>10 Nests RFID reader</b><br><b>Solution</b> | Date       | 17/07/2024 |
|   |  | N° Version | 1.0 EN     |
|   |  | Auteur     | A. ROGER   |

## Version Record

| Version | Version date | Author       | Comments                  |
|---------|--------------|--------------|---------------------------|
| V0.1    | 17/07/2024   | A.ROGER      | Document creation         |
| V0.2    | 04/09/2024   | S.VANWALBEEK | Add paragraph 2.5 and 2.6 |
| V1.0    | 11/09/2024   | C.FOUREL     | Documents validate        |
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## 1. General user information

**Read this user manual carefully and in its entirety before using the equipment.**



This document informs you with clear and detailed on how to use the RFID reader. Pictures and photos in this document are representative of all different version of the system. It is also true for all the actions, comments and explanation in the present document. All relative documents to the system have to be kept during all the life cycle of the system.

### 1.1. *Intended audience*

This manual is intended for any user likely to carry out operations with the RFID reader solution. It covers all the fields and topics relevant to the different user groups

### 1.2. *Structure of the manual*

The structure of the chapters is consistent with the use of the RFID reader, step by step.

### 1.3 *User advice*

If you cannot find answers to questions linked to the operation or use of the RFID reader, do not hesitate to contact us at the following email address: [support@biolog-id.com](mailto:support@biolog-id.com)

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## 2. Introduction

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### 2.1. *Solution goal*

This solution identifies a subject with the help of an RFID low frequency chip and associate subject and egg laying in a database, all records can be exported and used in other software depending on the client purpose.

The subject enters in a nest and rotate the door, a magnet on each door is detected by the ruler, it permits to record the visit start and the visit end.

During the visit, each egg laid will exit by gravity to the opposite of the subject entry, it will follow the egg guide, push the egg pendulum sensor and continue to the egg collector.

The laying will be associated with the visit in progress, and all data will be recorded to the board.

When the server will interrogate the RFID board and collect all data stored since last communication.

Each RFID Board store up to 1024 visits or egg events. RFID board integrate a battery to continue working autonomously up to 18hours without external power.

Up to 254 RFID Board can be associated to create a massive 2540 RFID nests.

All data from the server can be accessed by a client software Biolog-Id TAGLOGGER.

Custom Enclosures can be set in the software to separate data in accordance with reel enclosures.

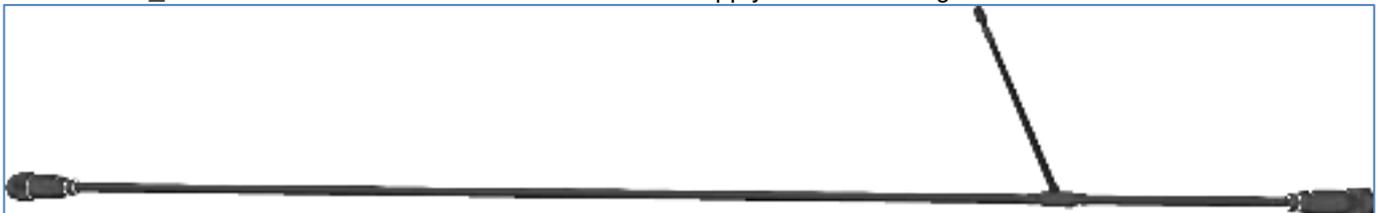
### 2.2. *Associated hardware*

Hardware supplied with the solution is composed with:

- SPR\_66503B: 10 nests RFID reader board ISO 134,2 kHz Biolog-Animal (PRD 664)



- CBL\_66424B: Power/RS485 cord to connect and supply each board together



- SPR\_66401A: egg pendulum Hall effect sensor with Led indicator



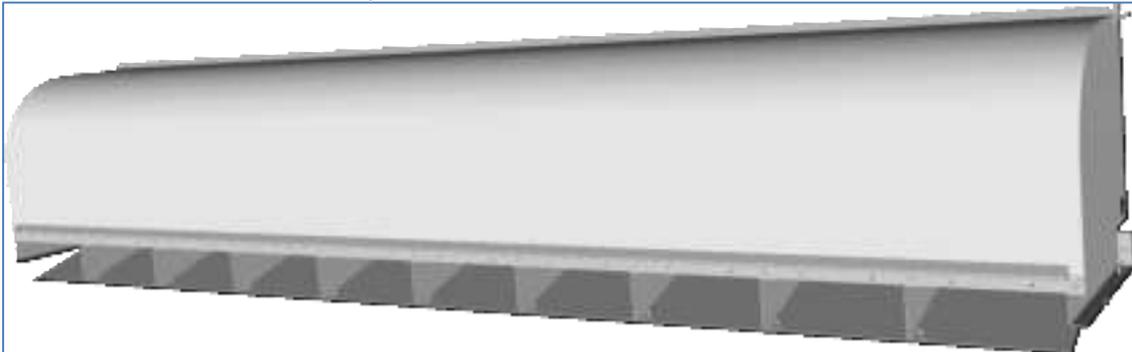
- SPR\_66402B: 10 doors Hall effect sensors board with led indicator



- CBL\_66426A: harness for connecting egg sensors to RFID Board



- a 10 nests structure with doors system

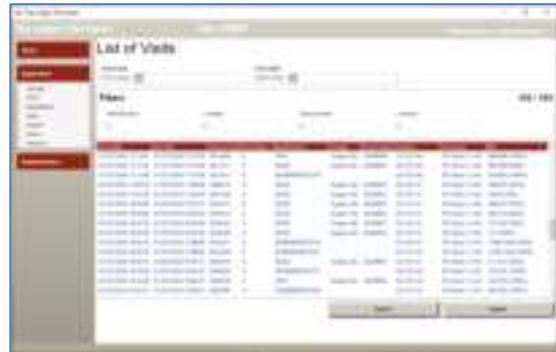


- a computer running a Biolog-Id Windows Service, an MS SQL database and a Biolog-Id Taglogger software



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- Server computer and Taglogger suite.



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### 2.3. System Mechanical Architecture

Each RFID Board are inserted under the 10 nests structure and are fixed with mechanical parts of the nest support.

The system can be assembled by level, depending on building configuration.

Here is an example of 2 levels system:

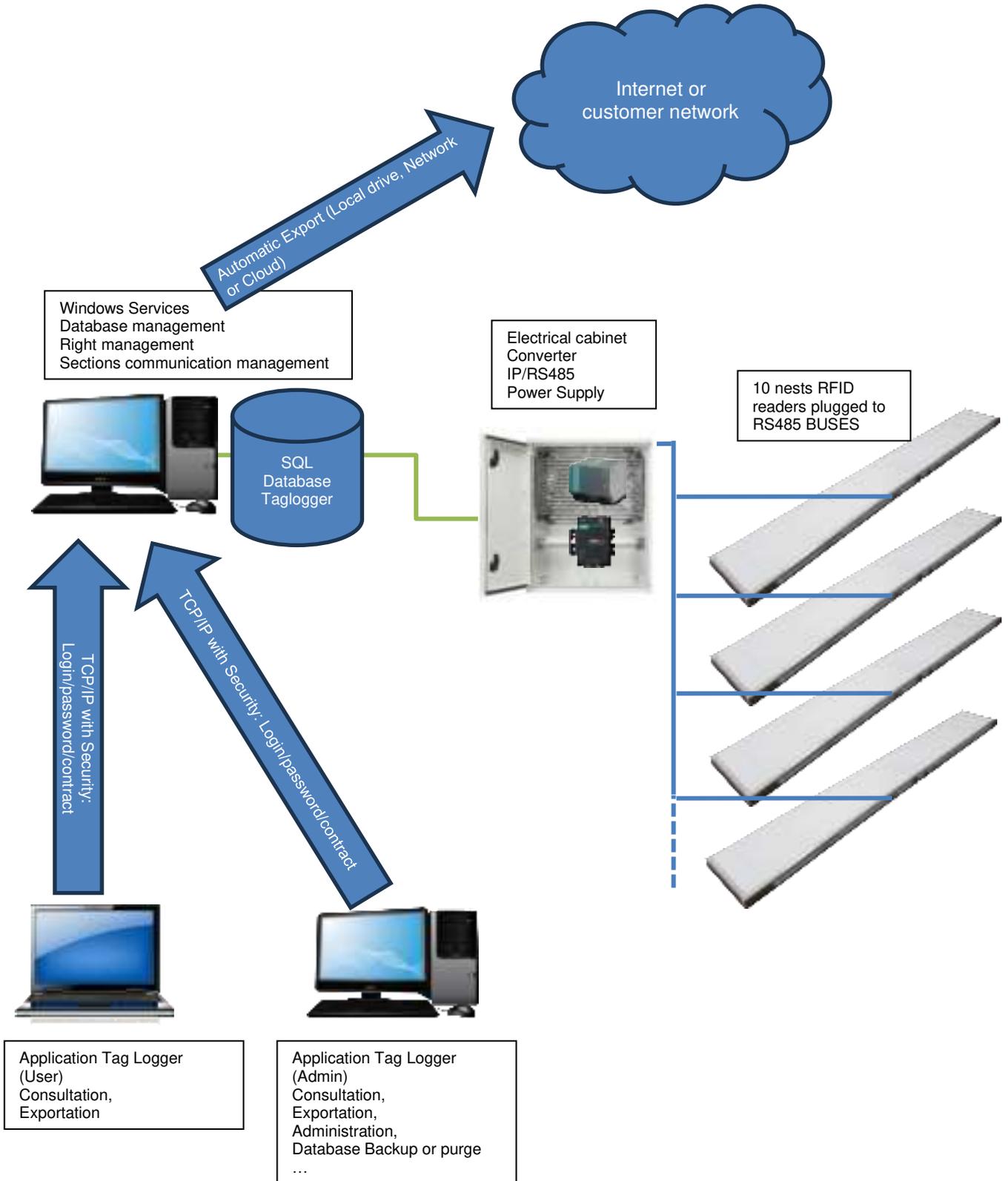


*System viewed from operator side*



*System viewed from subject side*

**2.4. System Data Architecture**



|   |  |            |            |
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## 2.5 **Warning for United States users**

### **Federal Communication Commission Interference Statement 47 CFR Section 15.105(b)**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This PRD\_6640005B complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### **NO UNAUTHORIZED MODIFICATIONS 47 CFR Section 15.21**

**CAUTION:** This equipment may not be modified, altered, or changed in any way without signed written permission from Biolog-id. Unauthorized modification may void the equipment authorization from the FCC and will void the Biolog-id warranty.

This device complies with FCC RF radiation exposure limits set forth for general population (uncontrolled exposure). This device must be installed to provide a separation distance of at least 20cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

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## 2.6. **Warning for users in the CANADA / Attention pour les utilisateurs au CANADA**

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This device complies with Industry Canada RF radiation exposure limits set forth for general population (uncontrolled exposure). This device must be installed to provide a separation distance of at least 20cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

---

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) il ne doit pas produire de brouillage, et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.*

*Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada.*

*Dans le but de réduire les risques de brouillage radioélectrique à l'intention d'autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.*

*Le présent appareil est conforme aux niveaux limites d'exigences d'exposition RF aux personnes définies par Industrie Canada. Cet appareil doit être installé afin d'offrir une distance de séparation d'au moins 20cm avec l'utilisateur, et ne doit pas être installé à proximité ou être utilisé en conjonction avec une autre antenne ou un autre émetteur.*

### 3. Installing hardware

#### 3.1. *Preliminary preparations*

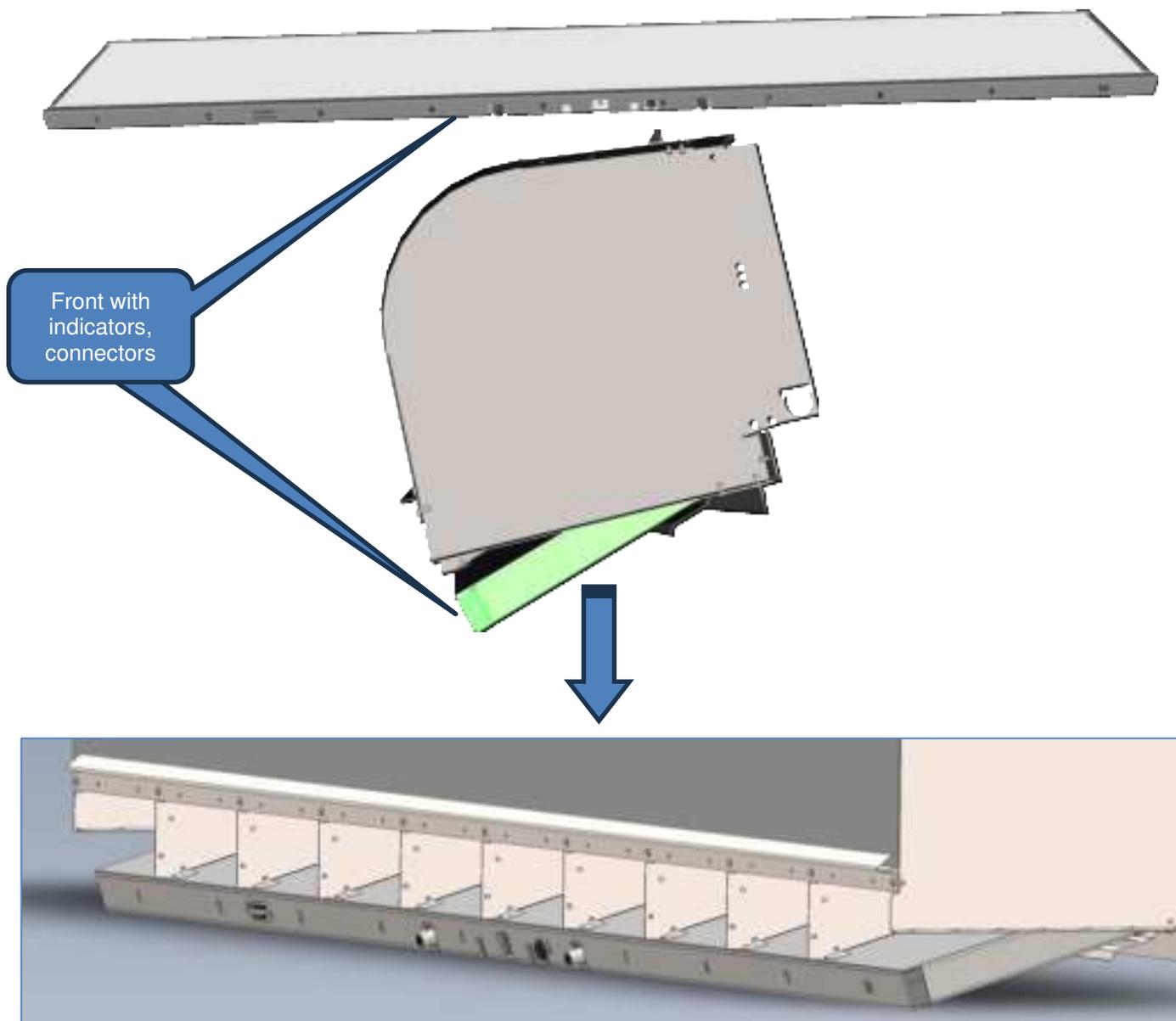
Install the Nests support structure and fix the 10 nests structure depending on your needs. Follow installation instructions from the nest structure supplier.

Install an electrical cabinet in accordance with the size of the installation.

#### 3.2. *10 nests RFID board*

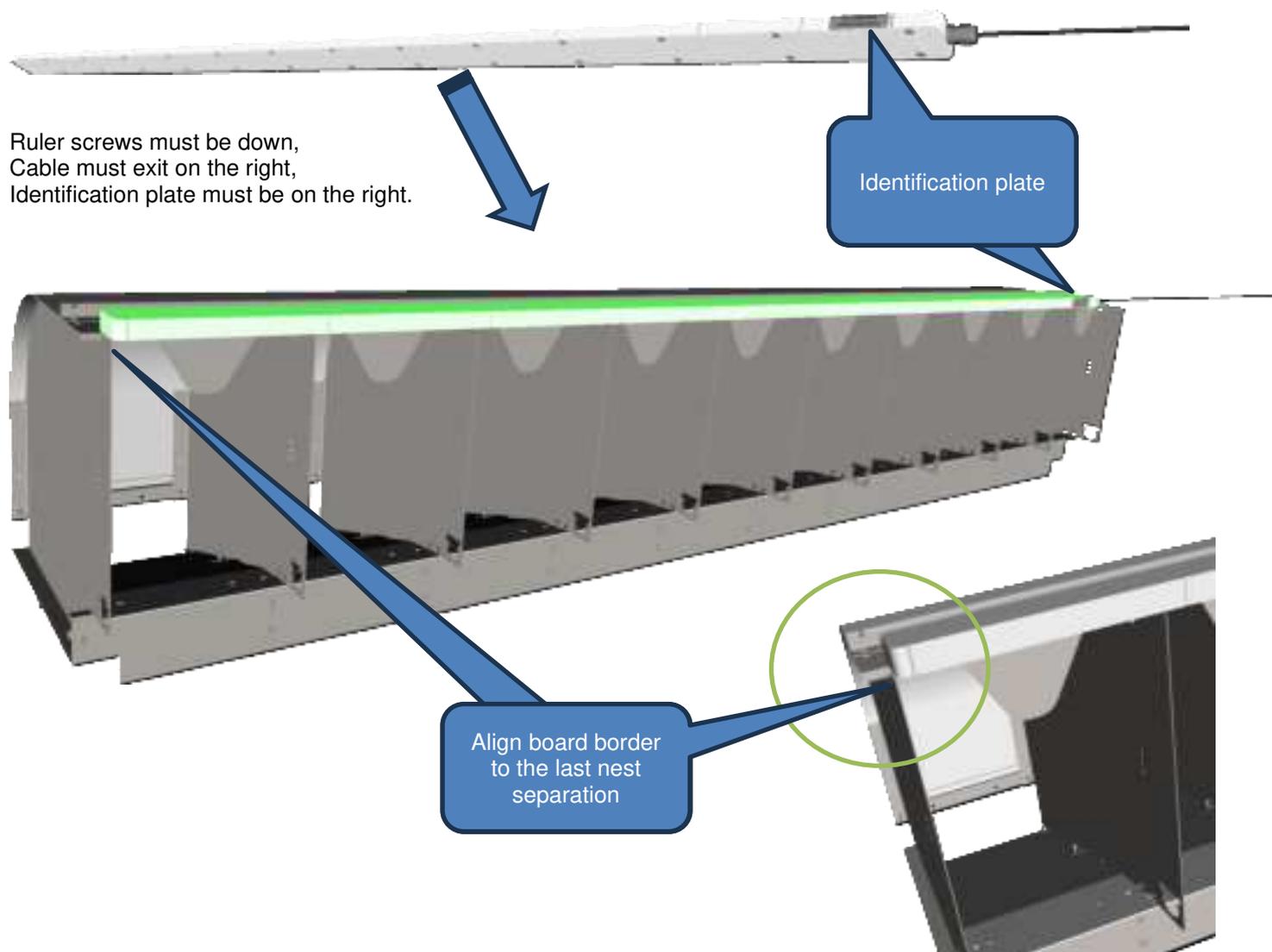
Insert the RFID board under the nest and use the supplied fixation from the structure supplier to lock the RFID board.

Be careful to be well align when inserting the RFID board.

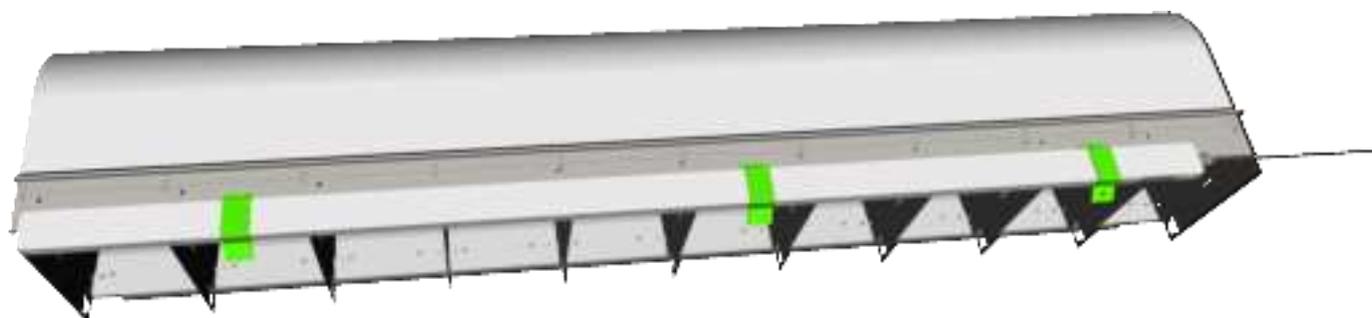


### 3.3. 10 doors sensor ruler

Mount the 10 doors sensor ruler at the back of the 10 nests structure as showed below.



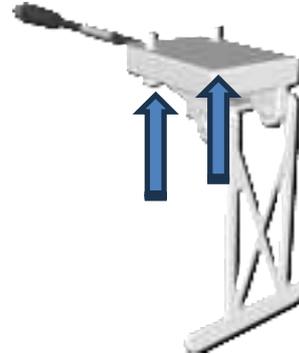
Fix the ruler with 3 plates supplied by the 10 nests structure supplier.



Use specified screw to fix the 3 plates to the 10 nests structure.

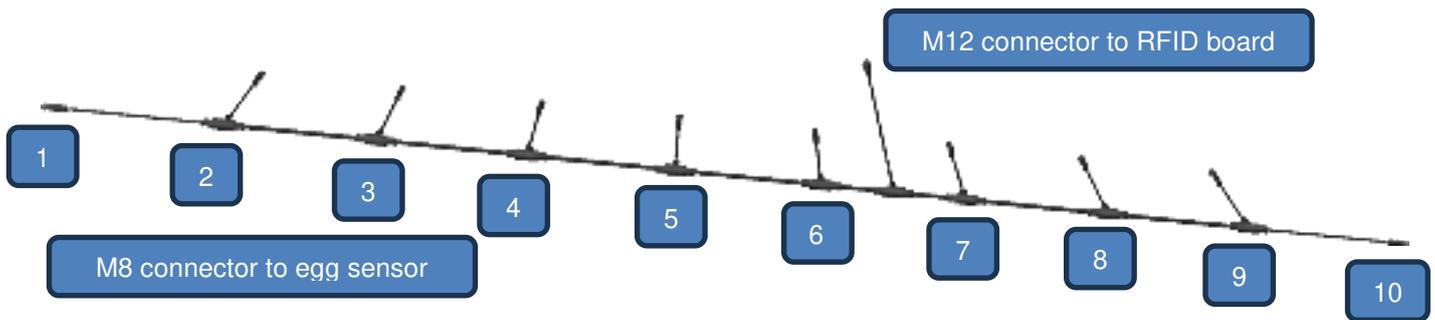
### 3.4. 10 egg sensors

Install Egg sensors all along the non-magnetic rod supplied by the 10 nests structure supplier.  
Mount the 2 plastic screws from down to up, nuts not needed.

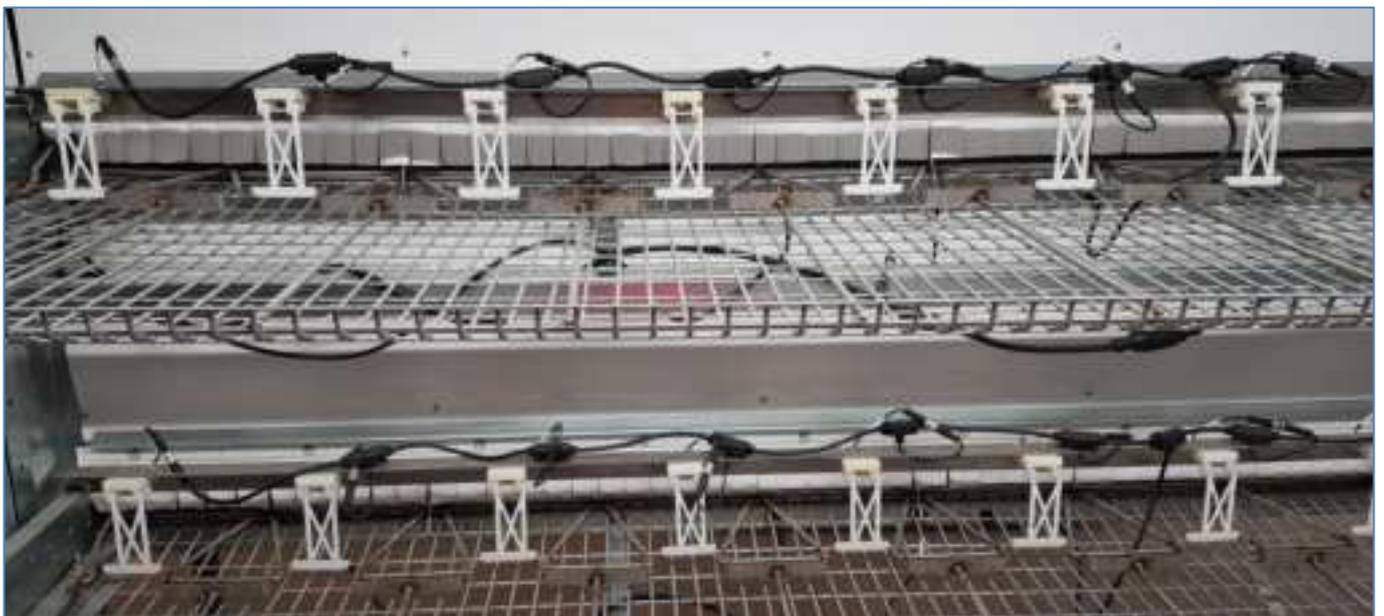


The lower part of pendulum must be at 20mm from the egg ramp. Adapt the support with the 2 adjusting screws.  
Egg sensors are calibrated to start detection of eggs between 27mm to 30mm.

After, install the Egg sensor harness and connect all egg sensors to each M8 connector 3pins.



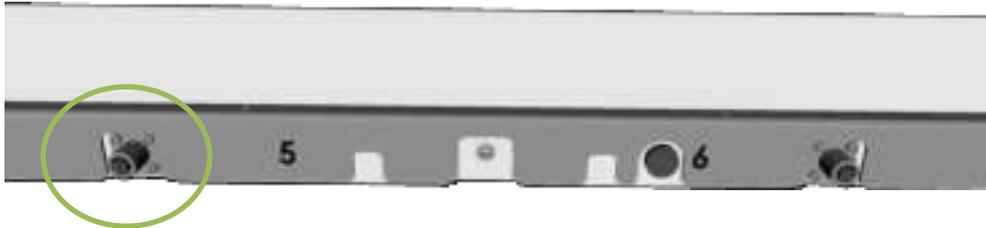
Example of mounted egg sensors:



#### 4. Connecting hardware

##### 4.1. 10 doors sensor board

The 10 doors sensors board M12 connector must be connected to the left M12 connector on the RFID board:



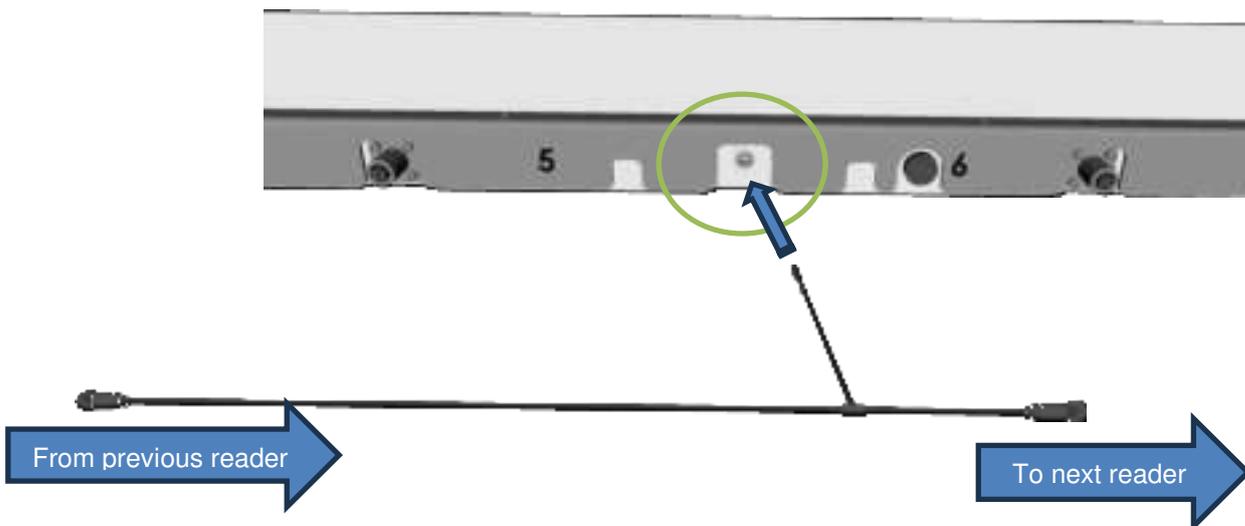
##### 4.2. 10 egg sensors harness

The egg sensor harness M12 connector must be connected to the right M12 connector on the RFID board:



##### 4.3. Power/RS485 cord

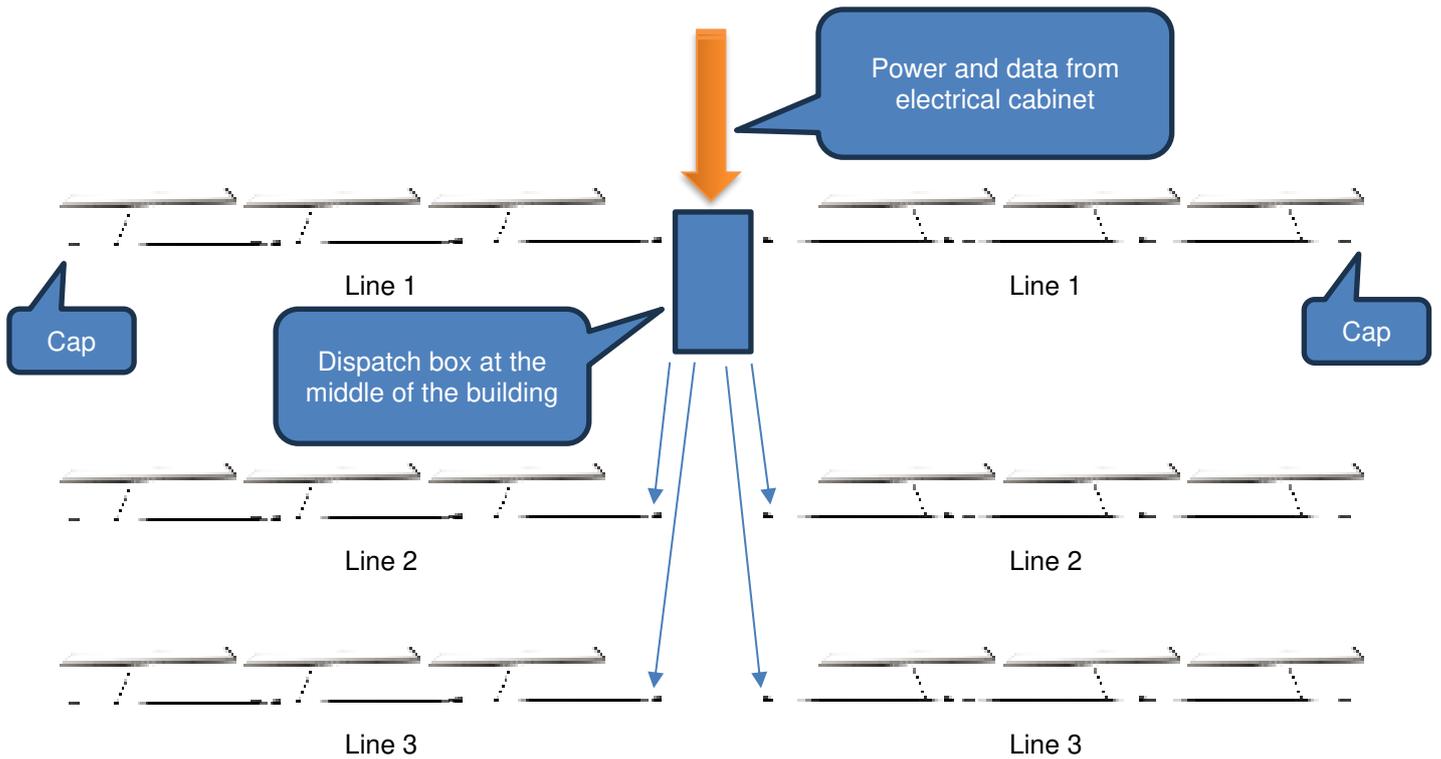
The Power/RS485 cord must be connected to the “snap in” connector at the center.



#### 4.4. *RFID Board to RFID Board connection*

All RFID boards are linked with power/data cords, the first one is connected to the dispatch box installed at the middle of the building, the last one is closed with a cap.

Up to 20 RFID boards can be connected on a single exit of the dispatch box.  
Up to 3 levels of RFID boards can be connected to the dispatch box.

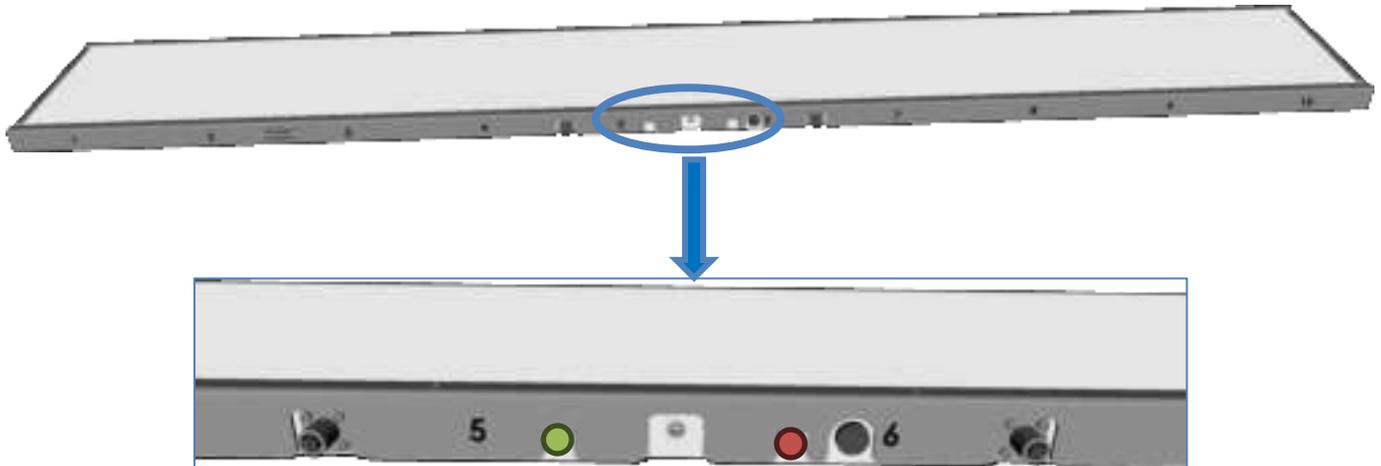


All connectors exiting from the dispatch box are Female type.

## 5. Hardware status and indicators

### 5.1. 10 nests RFID board

The RFID board is equipped with 2 indicators LED placed on the center of the board.



Left LED indicator is green or blue. Right LED indicator is only red.

| Left LED indicator (Board status) |            |                      | Right LED indicator (RFID status) |                  |
|-----------------------------------|------------|----------------------|-----------------------------------|------------------|
| Color                             | Behavior   | Status               | Color                             | Status           |
| Green                             | Fix        | Normal operation     | Red flash                         | RFID tag reading |
| Green                             | Slow blink | On battery operation | Red slow blink                    | Bootloader mode  |
| Blue                              | 1 flash    | Door activity        |                                   |                  |
| Blue                              | 2 flashes  | Egg activity         |                                   |                  |

Example of Normal operation:



Example of Normal operation and RFID detection:



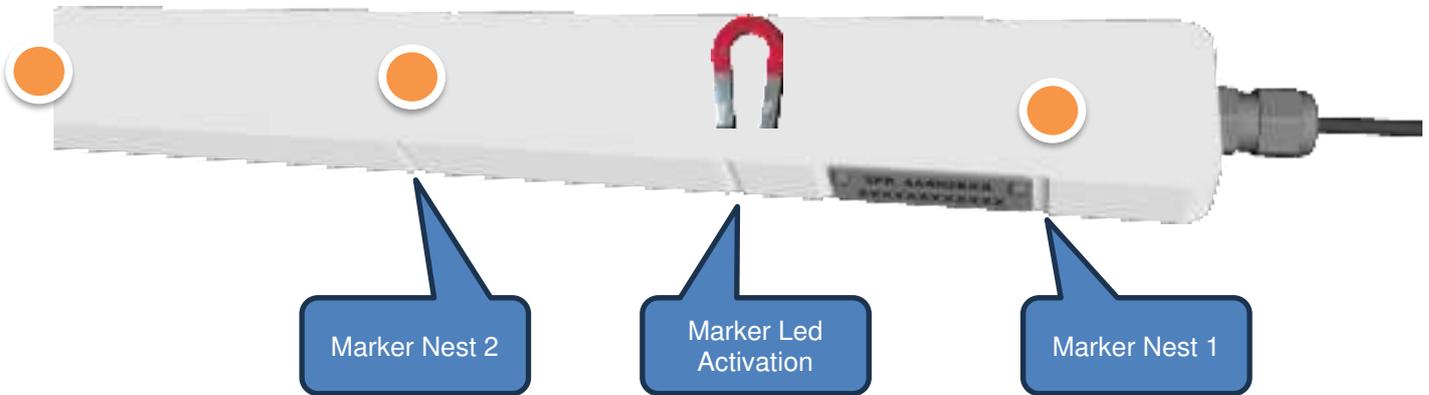
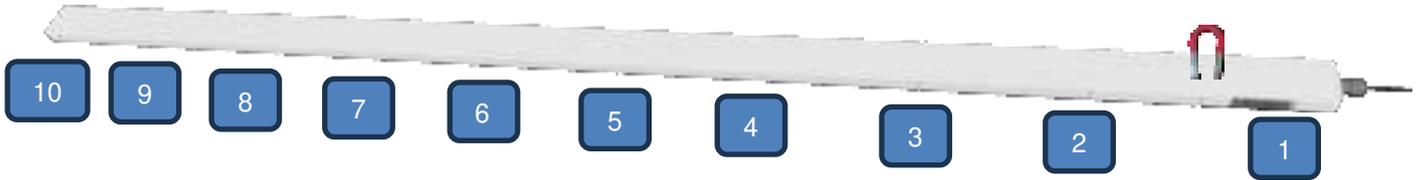
Example of blue flash (Egg or Door activity) and RFID detection:



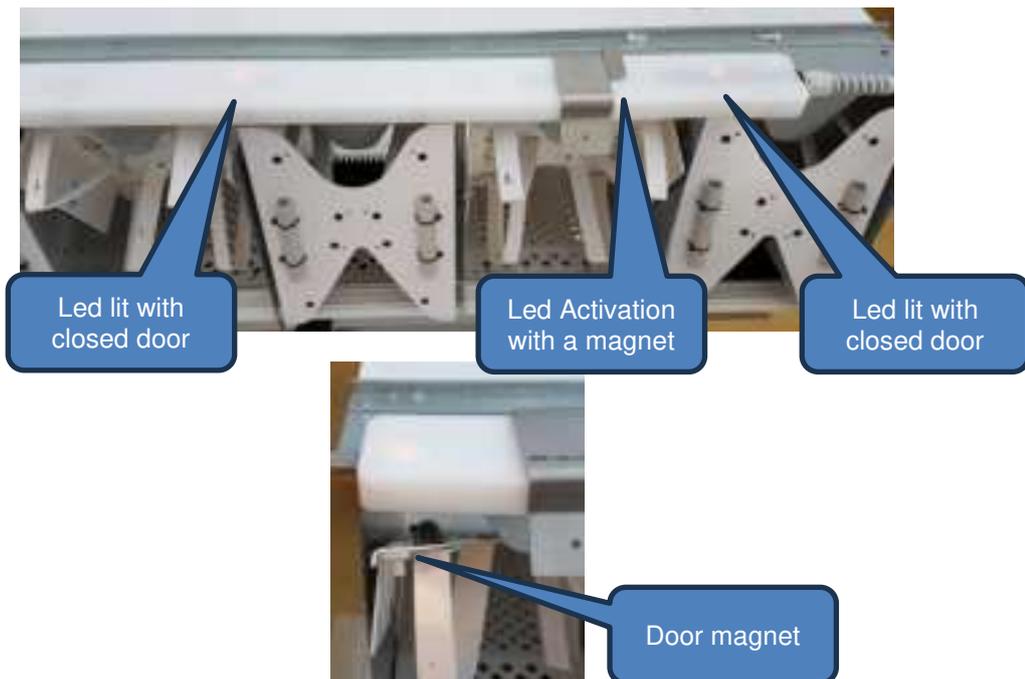
### 5.2. 10 doors sensor board

The 10 doors sensor board is equipped with 10 orange LEDs to check door detection. 11 markers are present on each side of the board, 10 for hall effect sensors, 1 for activate control LEDs.

Placing a magnet between doors 1 and 2 activate the LEDs control of doors.



Example of Leds activation with a magnet:  
 Leds are ON when the door is closed (Door magnet is not close to the ruler).



### 5.3. *Egg sensor*

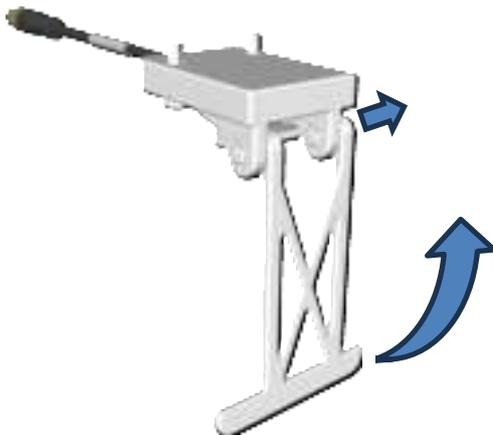
Egg sensor is equipped with a green status Led.



The Led is lit when the pendulum is pushed by an egg.

Egg sensor can be locked for maintenance or disassemble for cleaning purpose.

Lift the pendulum and push slowly the pendulum to the right for locking or push totally to disassemble.



Locked position

## 6. Configuration

All parameters can be set with the exploitation software *Biolog-Id Taglogger*.  
Only address change and firmware update use different software.

### 6.1. RS485 Address Change with Biolog-ID Diagtools

Each board is addressed with a number from 1 to 254.

Each board must have a unique number.

Address conflict will stop communication with concerned RFID Board.

Address change can be done only by software with Biolog-ID Diagtools.

Launch Diagtools Software and enter RS485 converter Ip Address (1).

Click on “Search” to broadcast equipment and choose one of the detected boards (2).

Click on Connect, the full status of the RFID board and accessories will appear on real time (3).



Click on “Address update” to enter the new address (4).



Validate the value to record new address in the RFID board.

Diagtools will automatically disconnect the board.

Launch a new search to connect again to the board with its new address.

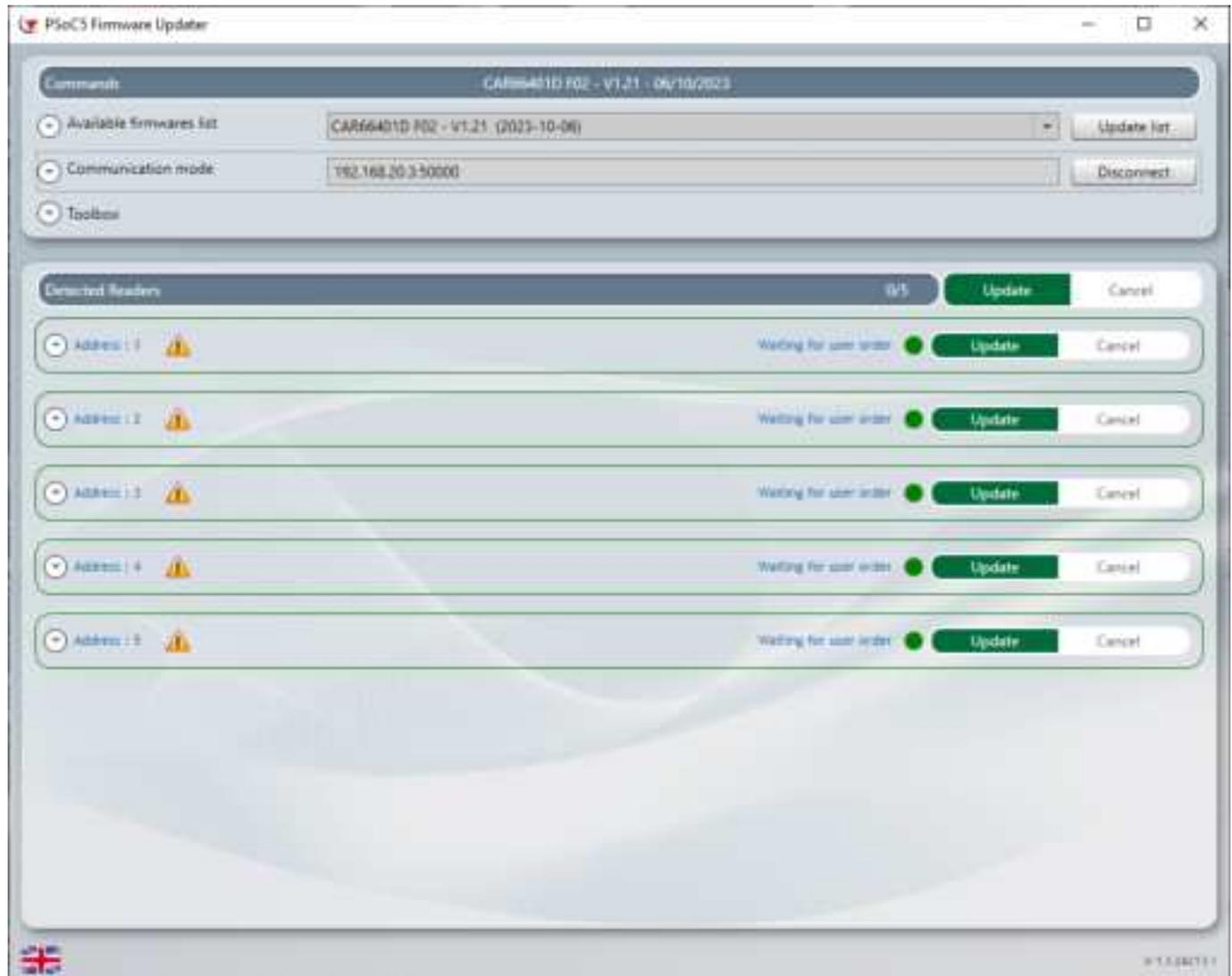
In case of address conflict, localize the other board with the same address and disconnect it to readdress the wrong one.

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## 6.2. *Firmware update and advanced tools PSocUpdater*

PSocUpdater is an internal Biolog-ID software that permit to change factory parameters and to run firmware update. This tool is dedicated to Biolog-ID technicians and another documentation will treat this part specially.

Here is a capture of PSocUpdater:



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## 7. Recommendations for use

### 7.1. *Commissioning / Recommissioning*

When commissioning the board, it is recommended to:

- 1 Do not connect boards to RS485 buses when mounting RS485 BUS
- 2 Activate the master disconnect switch over electrical cabinet
- 3 Turn on power to auxiliary devices
- 4 Enable Power on Sections (via TAGLOGGER)
- 5 Check for faults via red lights
- 6 Sequentially connect boards to RS485 BUSES
- 7 Power up the server
- 8 Check if the inverter is working, disconnect the inverter from the grid for 1 min and then plug it back in
- 9 Vacuum (purge) the database during a new batch via the application (via TAGLOGGER\Utility menu)
- 10 Verify that the hardware appears free of defaults on the dashboard
- 11 If defaults are present, correct them.



### 7.2. *Decommissioning*

When decommissioning boards, it is recommended to:

- 1 Create a database backup (via TAGLOGGER\Utility menu)
- 2 Disable Power of Sections sequentially
- 3 Turn off the server.
- 4 Turn off power of auxiliary devices
- 5 Deactivate the master disconnect switch on over the electrical cabinet
- 6 Check the control cabinet for no lights ON
- 7 Disconnect the RS485 BUS boards



The boards will continue to run until battery is low, up to 16h

### 7.3. *Disassembly / Cleaning / Storage*

Disassembling RS485 Extension Cords  
Retrieving Terminator RS485 Plugs  
Close wall plugs tightly  
Disassemble the boards and handle carefully  
Avoid vertical storage (Risk of damage/malfunction in case of fall)

Washing with fresh water and a soft sponge/brush with a suitable soft cleaning product

**HIGH-PRESSURE JET WASHING IS PROHIBITED**



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## 8. Maintenance