

# InToJon

## Instruction for InToJon „RoboCipa“ 50, 100, 200 – V2.0 incubators

### CONTENTS

1. Introduction .....	2
2. Unpacking.....	2
3. Location and installation .....	2
4. Short reference .....	3
5. Digital control system.....	3
6. Egg storage .....	4
7. Temperature .....	5
8. Eggshell thermometer.....	7
9. Humidity.....	7
10. Ventilation.....	9
11. Turning eggs .....	9
12. Egg preparation.....	10
13. Periodic cooling of incubation.....	10
14. Egg breaking .....	10
15. Cleaning .....	11
16. Maintenance and calibration.....	11
17. Specifications .....	12

# 1. Introduction

Read the instructions before use.

This manual describes in detail the use of the professional InToJon RoboCipa 50,100,200 egg incubator with programmable automatic egg turning system. Please read this manual carefully before using the unit for best results and keep this manual for future reference. The recommended procedures for successful hatching are given here, but incubation involves the control and monitoring of many steps and in some cases other parameter settings may be necessary. Your incubator is designed so that the user can modify the incubation conditions to suit different species in different environmental conditions. Every incubation situation is different, so only by monitoring all parameters you will achieve the best results. There are many books describing incubation techniques that you can also refer to.

## 2. Unpacking

2.1. Your incubator was delivered in protective packaging. Remove all adhesive tapes, straps and packaging from parts of the incubator. Keep the cardboard box and packing materials for repacking.

2.2. Check that all parts are present and undamaged. **Damaged appliances must not be used.**

2.3. Also check that the power supply meets the requirements of the incubator. The incubator **must** be connected via a voltage stabiliser to avoid damage to the electronic components of the control unit due to voltage drops in the mains.

## 3. Location and installation

**THE INCUBATOR MUST BE PLACED IN A ROOM THAT IS FREE FROM WATER OR MOISTURE AND OUT OF REACH OF ANIMALS AND CHILDREN.**

3.1. The incubator will perform best in a room where there are no significant temperature fluctuations. It is also necessary to ensure that the temperature does not cool down significantly at night. Ideally, the room temperature should be controlled by a thermostat between 20 and 25 °C. Never allow the room temperature to fall below 18 °C and ensure that the incubator is not exposed to direct sunlight.

3.2. Always place the incubator upright on a flat surface, not on the floor. "The RoboCipa 50 incubator weighs 17kg, the RoboCipa 100 incubator weighs 24kg and the RoboCipa 200 incubator weighs 30kg. Make sure the surface is suitable to support the weight and contents of the incubator.











3.3. 1-2 hours after unpacking the incubator, plug the incubator's power cord into an electrical outlet, making sure that the cord is not under tension. The incubator fans will turn on, an audible alarm will sound and the LCD display will show the air temperature and humidity.

## 4. Short reference




- Rear "On/Off" switch - it switches the incubator on or off.
- Switch on the side or front "Aut. Turning". - This switch can be used to activate the automatic turning.
- The "Turning" switch on the side controls the position of the shelves when automatic turning is switched off.
- Light switch - This switches on the lighting inside the incubator.




## 5. Digital control system

The RoboCipa control system uses high-precision, individually calibrated temperature and humidity sensors. Do not compare cheap analogue or digital thermometers and humidity gauges with the data displayed on the incubator's screen, as these can be misleading.

5.1. **NORMAL OPERATION** - there are 2 windows showing different parameters, press **[[Set]]** to toggle between them. One of the windows shows temperature , humidity , eggshell temperature  and ventilation . If the arrow  appears next to the temperature or humidity badge, it means that the channel is active. It is either heating or raising humidity. The arrow next to the temperature badge may be flashing because the heating channel is working according to an algorithm we have developed to avoid overheating the eggs. If the temperature  does not show a number next to the eggshell temperature, but says OFF it means that the sensor is disconnected and can be easily removed. If  starts flashing, it signals that ventilation is on. When you click **[[Set]]** you will be in another window that says Day with a  (clock) below it, together they signal how much time has passed since you put your egg in the incubator. It counts minutes, hours and days. Once the eggs have been laid, they need to be "nulled". This is easy to do, just press the arrows **[[▲]]** **[[▼]]** in that window at the same time and hold until it "beeps". Zeros will appear everywhere. From that second, the days are counted and you will know exactly how long ago you put the eggs in. When a new batch of eggs is loaded, this procedure needs to be done again to zero the eggs. In the same window, the time elapsed since the egg was turned is also displayed. If the arrow is pointing upwards , the front of the shelf should go up when the automatic opening is activated, if the arrow is pointing downwards , the front of the shelf should go down.

### 5.2. SETTING TEMPERATURE, HUMIDITY AND VENTILATION

In the window that displays the temperature and humidity, hold down **[[Set]]** for 3 seconds to enter the parameter setting. One of the numbers next to , ,  will start

flashing. The number next to which the number flashes can be set with the arrows [▲] or [▼], e.g.: the number next to  flashes, then we can set the desired temperature. When the temperature is set, the [Set] button is pressed again. The number at  starts flashing, then we can set the desired humidity. When the humidity is set, the "Set" button is pressed again. The number at  starts flashing, then we can set the desired ventilation time. Once all the settings are selected, you need to stop pressing anything and after 5 seconds all the numbers stop flashing. This means that the settings have been saved and the unblinking numbers show the actual reading.

## 6. Egg storage

Choose eggs that meet the following criteria:

1. Choose eggs from well-developed, mature and healthy hens.
2. It's great when a hen-cock pair has a high percentage of fertilised eggs.
3. The hen is not under much stress during egg laying.
4. Birds have a complete and healthy diet.
5. Hens and cocks are not related (brother, sister, mother, father).

Avoid eggs that are too large or too small: large eggs will not hatch well and small eggs will hatch small chicks.

Eggs with cracked shells should also be avoided as they have difficulty retaining the moisture needed for normal embryonic development.

Do not incubate eggs that are too deformed or eggs with different incubation periods, as this may affect the hatchability of both types of eggs.

If you put eggs with different incubation periods in the incubator, most of the moisture in the eggs will evaporate, which will have negative consequences for those chicks that have not yet had time to hatch.

For incubation, only clean eggs should be used, do not wash them. This will protect the inside of the egg from pathogens. Rubbing during washing can encourage bacteria to enter through the pores of the shell. If you do wash your eggs, make sure you disinfect them (e.g. with OXICID S disinfectant).

It is often the case that people handle the eggs gently during incubation, but neglect to take care of them until they are placed in the incubator.

However, the embryo is developing and needs to be properly cared for from the moment the egg is laid. Improper care leads to poor hatching.

Here are some tips to help you maintain the quality of the eggs you hatch:

Eggs should be collected at least three times a day. This should be increased to five times a day when the daily temperature exceeds 24 degrees Celsius. Two or three times in the morning and once or twice during the day and evening.

Slightly soiled eggs can be successfully hatched if the above cleaning rules are followed. Store eggs in a cool and moist place. Most species can be stored safely for up to 14 days before the rate of hatching may be seriously reduced. Daily turning of stored eggs also helps to maintain good hatching results.

Store the eggs in a cool and moist place.

The best relative humidity in the room where incubating eggs are kept is 70-80%. Less than this will cause the eggs to dry out, more than this will cause condensation and mould to form.

The optimum temperature is 8-12°C.

Why is indoor temperature so important? Eggs are constantly undergoing decomposition processes, which low temperatures help slow down. Failure to comply with the recommended regime results in the proteins becoming more liquid, destroying the lysozyme and rendering it unable to resist bacteria and microbes. The yolk breaks down fats, nitrogen compounds and nutrients, vitamins. If this goes on long enough, the very structure of the embryonic tissues at the cellular level changes irreversibly.

The position of the egg should be changed periodically, at least once a day before placing it in the incubator.



The quality of the fertilised egg is at its best for up to seven days, but declines rapidly after that. Therefore, if you intend to hatch chickens, do not keep eggs for more than 7 days. After 3 weeks of storage, the hatching percentage drops to almost zero. Plan ahead or have a regular hatching schedule to avoid egg laying problems.

Chilled, incubated eggs are gradually warmed to room temperature before being placed in the incubator. Sudden warming between 12 and 37 degrees causes condensation of the eggshell, which can lead to the development of pathogenic bacteria.

## **7. Temperature**

A stable and appropriate temperature is essential for good results. Adjust carefully.

7.1. Note: Your incubator may be set at the wrong temperature for hatching, so make sure you check the data on the hatching sheet before you lay your eggs.

7.2. When the incubator warms up and reaches the set temperature, the arrow  next to  on the display goes out or flashes. After switching on, allow the incubator to warm up and sit for at least 1 hour empty.

7.3. We have already discussed how to determine the temperature in section 5.2 "SETTING TEMPERATURE, HUMIDITY AND VENTILATION"

7.4. To check the temperature, look at the digital temperature display. The display shows the air temperature to the nearest 0.1°C. Adjust the temperature carefully by small variations as this can have a significant effect on the incubation results.

7.5. Developing embryos are quite tolerant of short-term temperature drops, so the user does not need to worry about the chilling that occurs when checking the eggs. Temperatures higher than the required temperature can quickly cause severe damage.

Deviations in temperature during incubation cause deformities in embryos. High temperatures cause blood circulation and formation, the shell dries out, the abdominal cavity does not form, so the internal organs are not protected. However, if the surviving chicks hatch, you can see the remaining yolk sac, the albumen. The shell is green and dirty. Pathologies such as: curved neck and limbs, missing eyes may be present. The chicks are weak, roll weakly and try to escape from the egg. Attempts by the farmer to help the chickens result in bleeding and death. When you open eggs from which chickens have tried to escape, you can usually see live embryos with a wet head and neck, feathers sticking together, and enlarged livers and hearts. The rectum is filled with faeces and the intestines are clogged with yolk. Therefore, the temperature and humidity of the incubator must be carefully monitored. The optimum temperature for the incubation process is between 37,2°C and 38,0°C.

The last stage is from day 16 of incubation until hatching. Processes inside the egg: maturation of the organs and the whole embryo. The temperature range for the maturation stage is 38,1-38,8°C (the recommended temperature for the eggshell is 38,4-38,8°C, but not higher). However, it should be remembered that during this stage the eggs are actively releasing what is known as 'metabolic heat', i.e. the heat released during the metabolic process. Ventilation of the incubator is necessary to regulate the temperature of the eggshell to prevent overheating. The upper limit of normal development of a chick embryo is 39°C, and the maximum temperature at which an embryo can live without compromising normal development is 43°C. In the early stages of development, the maximum temperature that embryos can tolerate is lower than in later stages. The maximum temperature limit up to day 12 is 41°C and from day 12 onwards 43°C.

By exposing juvenile embryos to heat (45.5°C) for 3-5 hours during the early stages of development (from 0 to 19 hours of incubation), the researcher concluded that the permissible exposure to high temperatures decreases with the age of the embryo. At 45°C, death occurs rapidly. When the temperature rises to 41°C, the chick dies after 6 hours.


Low humidity adversely affects the weight of the egg, increases the volume of the air pocket and you may also see a blood clot near the beak. Hatching is premature, the chick finds it very difficult to break through the shell, or it fails to break completely and dies. At low temperatures, the embryo develops slowly, when we do a translucency on day 5-6 of incubation, we see that the embryo is small, the blood circulation is poorly developed and

the blood vessels are pale. On day 10-11, the allantois does not cover more than 50% of the egg. The chicks hatch late and are weak, lethargic and inactive when hatched.

7.6. RoboCipa incubators are equipped with a temperature alarm that alerts you to high or low temperatures and humidity.

7.7. If the temperature exceeds 0.3 degrees, emergency ventilation is activated and the temperature is forced down.

## **8. Eggshell thermometer**

The eggshell thermometer  is designed to monitor the temperature of the shell during the second half of hatching, as eggs start to get very warm during the last stage of development. After much research, it has been found that prolonged high shell temperatures can damage or kill the fruit. A shell temperature of more than 38.4°C already poses a serious threat to the embryo. Therefore, a temperature sensor with a cable is installed to monitor the shell temperature. The shell sensor itself is attached as follows: the egg is removed from the centre of the +- tray (the egg must be developing), the egg is held with the pointed end downwards and the sensor head is attached to the side of the egg, with the sensor wire directed to the blunt end of the egg. Once the sensor is attached, it should be taped with adhesive tape so that the sensor does not receive direct airflow from below and has less interaction with the environment. This is important as it will give the most accurate indication of the shell temperature. If the shell temperature rises above 38,4° C then the incubator temperature on the controller should be reduced by 0,1-0,2° C. If the shell temperature is below 38° C, it's not a big deal, it's more important to monitor the temperature of the shell until the point of splitting, as it can happen that the chick gets very hot and the incubator temperature has to be reduced to 36,5° C.

## **9. Humidity**

Short-term fluctuations in humidity are not important. The average humidity during the incubation period must be close to the optimum to achieve ideal weight loss. High humidity for one or two days prior to splitting is also important. Beware of constant excessive humidity.

Incubation humidity is influenced by two main factors: the evaporation of water in the incubator from the eggs and from the incubator's supplementary water vessel, as well as the ventilation level. The amount of water in the incubator air also has an influence.

Includes 17x20cm foam plate, which must be placed on the water to float, and the fan is not placed in the centre, but on the side of the water bowl where the rest of the water area will be open. The vessel shall be brought closer to the incubator door. The foam plate should be removed when high humidity is required in the incubator. During splitting, the water dish shall be placed closer to the centre of the incubator and the fan in the centre.

The humidity fan only rotates when humidity needs to be induced, once it has been induced the fan stops rotating.

The fan is connected via a quick connector. When the leg of the connector is raised at 90 degrees, the cable is inserted and the leg is folded over. **The orange leg is the red wire, the blue leg is the black wire.**

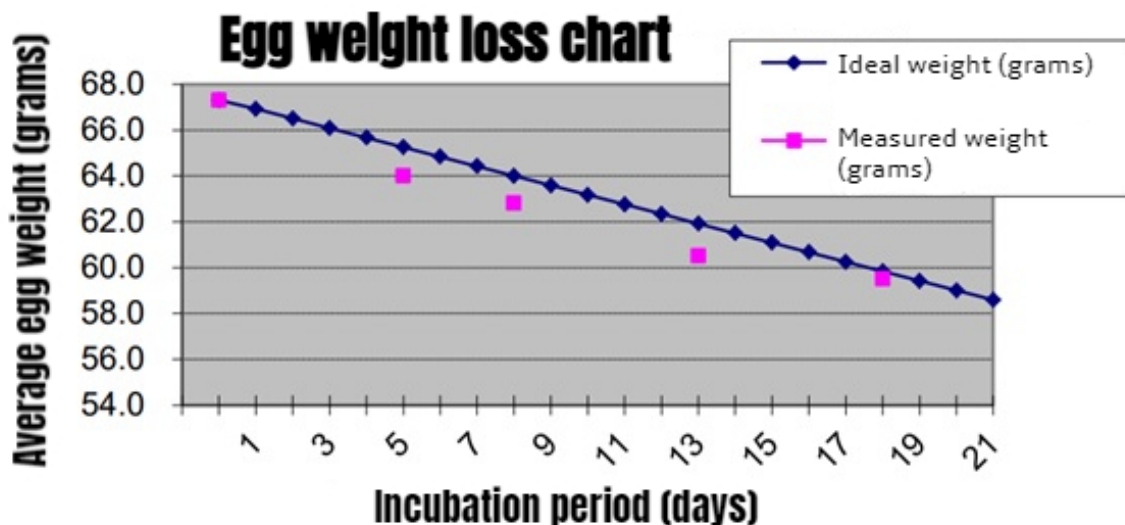
About 1 litre of water is poured into the water container.

9.1. Monitor the humidity level and adjust it to meet the published recommendations for different bird species. You can find the recommendations in our hatching table.

9.2. Monitor the weight loss of the eggs, which varies directly with moisture, and adjust according to the published weight loss.

Eggs lose moisture through their shells and the rate of evaporation depends on the moisture level around the egg and the porosity of the shell. During incubation, the eggs must lose a certain amount of water, which corresponds to a loss of about 13 % to 16 % of their weight depending on the species. Periodic weighing of the eggs during incubation allows the moisture level to be monitored and, if necessary, adjusted in order to achieve an appropriate weight loss.

Weigh the eggs on the day they are placed in the incubator, determine the average weight and graph it. The ideal weight loss line can be drawn by joining the dots representing the initial average weight with the ideal hatching weight (13 % to 16 % lower, depending on the species), and the x-axis represents the incubation time (in days).



By measuring the actual average weight every few days, the actual weight loss can be plotted and compared with the ideal weight loss line and adjustments can be made to the moisture. For example, if the actual weight loss was greater than the ideal.



(see graph above), which means that the air was too dry and the humidity level needs to be increased to compensate.

Of the two methods above, the most reliable is the egg weight method, which is recommended, especially if hatching performance is poor or if high-value eggs are incubated.

9.3. During decomposition, the high humidity level drops dramatically when the door is opened and takes some time to recover. Resist the temptation to open the door frequently - allow at least 3-6 hours between checks.

## **10. Ventilation**

InToJon professional incubators have a closed-loop system, which means that the air is refreshed every fixed time. This system avoids hot and cold air temperature zones and allows a more even mixing of air and humidity.

10.1. After the eggs have been laid, the ventilation time should be set according to our recommended ventilation times in the "ventilation" section of the hatching chart and continue with section 5.2 "SETTING TEMPERATURE, HUMIDITY AND VENTILATION" and change the ventilation time as it appears on the hatching chart.

10.2. Changing the parameters is mandatory because the later the embryo is, the more air it consumes.

10.3. Ventilation is very intense when the eggs hatch.

## **11. Turning eggs**

The turning system works in two modes:

Automatic and manual mode.

### **AUTOMATIC SWITCHING ON AND OFF**

The automatic turning can be deactivated with the switch on the side or front "Aut. Turn.". When deactivated, the "Turning" button is activated and this is the manual mode.

### **START OF TURNING**

**DO NOT START TURNING WHEN THE DOOR IS OPEN TO AVOID THE RISK OF POSSIBLE INJURY OR DAMAGE TO THE MECHANISM.**

When the eggs are laid and the door is closed, the automatic turning is activated. The shelves tilt forwards or backwards by 35 degrees.

To straighten the shelves, you need to switch off the automatic turning before you can use the "turning" button to put them in the desired position. With the button, the shelves are positioned horizontally before the eggs are cracked or the egg baskets are inserted.

!!! Due to the number of trays, the trays must be swapped, as the heat radiated by the eggs themselves heats the egg tray above. To avoid uneven development, the trays should be changed every 2-3 days: 1 (the highest) to 4, 4 to 3, 3 to 2, 2 to 1. This applies to „RoboCipa 100“ and „RoboCipa 200“ incubators.

## 12. Egg preparation

12.1. Make sure the incubator has been running for a few hours and has stabilised at the correct temperature before laying the eggs.

12.2. Use the standard egg "separators" purchased with the incubator to properly place the eggs on the basket. The eggs should be evenly distributed on each basket to balance the weight on the shelf. For example: If you do not have enough eggs to fill the entire basket, we do not recommend placing the eggs on only one side of the basket, i.e. the front or the back.

12.3. Ensure that no one interferes with the movement of the trays or the turning shelves. This could damage the turning mechanism and invalidate the warranty. Stack the turning shelves evenly to avoid unbalanced operation. **ENSURE THAT THE BASKETS ARE STACKED CORRECTLY IN THE SHELVES.**

12.4. Once the egg baskets are placed on the shelves, close the door and switch on the automatic turning.

12.5. Once the eggs have been added, the temperature must not be changed for 24 hours to allow the eggs to warm up. Check the water level approximately every 2-3 days and the temperature daily. Check the eggs after 1/3 of the incubation period to discard clearly visible, infertile eggs.

## 13. Periodic cooling of incubation

Poultry farmers have known for decades that eggs can be cooled for a limited period of time during incubation, but recent studies have shown that cooling can significantly increase hatching rates. These studies have been carried out on poultry, but it is generally accepted that they can also benefit waterfowl.

Cooling is a perfectly natural process, as most birds leave the nest at least once a day and leave their eggs unheated for a long period of time. The best hatching rates are always achieved when the incubator best replicates natural nest conditions.

The incubation sheets indicate from which day and for how long cooling should be carried out.

## 14. Egg breaking

14.1. Before cracking the eggs, the shelves must be placed horizontally and all separations removed, and a protective cover placed on the top basket.

14.2. It is useful to keep eggs that are about to hatch at a slightly lower temperature. The recommended incubator temperature at the time of splitting should be approximately 1 °C lower than the initial incubator temperature at the start of incubation.

14.3. The humidity level should be in the high 60-70s during hatching (see hatching sheets), but please note that ventilation control must be intense.

14.4. Once most of the eggs have hatched (after 3-6 hours), the hatchlings can be transferred to a brood box or under a heating lamp.

14.5. During decomposition, the high humidity level drops dramatically when the door is opened and takes some time to recover. **Resist the temptation to open the door frequently** - wait at least 3-6 hours between checks.

## 15. Cleaning

IMPORTANT:

DISCONNECT THE INCUBATOR FROM THE MAINS WHEN CLEANING.

ENSURE THAT ALL ELECTRICAL PARTS ARE DRY.

NEVER WASH THE TRAYS, INSULATION BOARDS, FACADE OR PARTS OF THE WATER TANK WITH LIQUIDS AT TEMPERATURES ABOVE 50 °C. DO NOT USE A DISHWASHER TO CLEAN THESE PARTS.

NEVER TOUCH THE TEMPERATURE AND HUMIDITY SENSORS WITH WASHING-UP LIQUID. THEY ARE FIXED AND HANGING FROM THE TOP. LIQUIDS CAN DAMAGE THE SENSOR.

15.1. After each hatching in the incubator, remove and wash the egg baskets with incubator disinfectant. Wipe all other internal surfaces with a soft cloth dampened with the solution. If you wash the incubator with water, we recommend that you disinfect it.

Ensure that the instructions provided with the liquid are followed. Dust and lint can be removed from the fan with a soft dry brush.

15.2. If you use the incubator regularly, it is still recommended to wash and disinfect it at least every 2 months.

15.3. The outside of the incubator can be cleaned with a damp cloth. Avoid getting moisture inside the incubator's electrical housing or electrical connector.

15.4. Always clean the incubator at the end of the breeding season and make sure the inside and outside are **completely dry**.

## 16. Maintenance and calibration

IMPORTANT: THE HEATING ELEMENT AND THE CONTROL SYSTEM HAVE HIGH MAINS VOLTAGE. NEVER ATTEMPT TO CARRY OUT SERVICING WORK UNLESS THE UNIT IS DISCONNECTED FROM THE MAINS. POSSIBLE RISK OF ELECTRIC SHOCK!

16.1. Under certain conditions, condensation can form on the inner walls of the incubator. The presence of water accumulated at the base of the incubator does not affect the operation of the incubator and does not pose a risk.

16.2. In the event of a fault, first check that the power supply is working and that the connector on the power cable is fully plugged in. The digital control system can be reset to the original factory settings.

16.3. If the problem persists, please contact the distributor from whom you purchased or the InToJon Service Department.

16.4. "The functional parts of InToJon incubators are modular, readily available and easy to install. This must be done by a suitably qualified person with the basic tools. Installation instructions are provided with the parts to be replaced.

16.5. The digital temperature and humidity controller is individually calibrated at the time of manufacture, but can be recalibrated if necessary. It is not recommended that this procedure be performed by the user.

USE CHEAP ANALOGUE OR DIGITAL THERMOMETERS AND HYGROMETERS CAREFULLY.

#### CALIBRATION MENU

If you want to calibrate the incubator yourself, please contact us and we will give you detailed instructions on how to do it.

## 17. Specifications

Maximum egg hatching capacities to be approximated:

<b>Egg size</b>	<b>RoboCipa 50</b>	<b>RoboCipa100</b>	<b>RoboCipa200</b>
Quail	150	300	600
Chicken	60	120	240
Ducks, turkeys	40	80	160
Goose	17	35	70

Dimensions:

RoboCipa 50: Height - 62cm, Length - 55cm, Width - 46cm

RoboCipa 100: Height - 77cm, Length - 55cm, Width - 46cm

RoboCipa 200: Height - 97cm, Length - 55cm, Width - 46cm

Weight:

RoboCipa 50: 17kg

RoboCipa 100: 23kg

RoboCipa 200: 30kg

Energy consumption:

RoboCipa 50: Max. 110 watts., Avg. 40 watts.

RoboCipa 100: Max. 190 watts, Avg. 50 watts.

RoboCipa 200: Max. 200 watts, Avg. 60 watts.

Electricity supply:

AC: 230v 50Hz

For more information on how to unpack, prepare for use, check eggs and hatch successfully, see:

Youtube channel "**InToJon**"

You can also find a lot of useful information on our website: [www.laisvasukis.lt](http://www.laisvasukis.lt)

If you have any questions, you can contact the manufacturer by email: [info@intojon.lt](mailto:info@intojon.lt)

Alternatively, contact the distributor you bought from.