Coriolis Compact

USER GUIDE

CORIOLIS Compact

bertin technologies

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User Guide Coriolis®Compact

Designed by:

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1. INTRODUCTION

Bertin Technologies is grateful that you have purchased the Coriolis Compact air sampler.
The Coriolis Compact is an air sampler that has been designed specifically for collecting micro-organisms through the implementation of cyclonic technology. The Coriolis Compact is an innovative air sampler that assesses bio-contamination levels. It is mainly designed to monitor and control air quality in environmental research on pollution, in the pharmaceutical, food-processing and veterinary industries and in the biomedical and health sectors.
This manual provides all of the required information for the installation, routine use, maintenance and transport of your Coriolis Compact.
This document also summarises the operating mode for obtaining a sample with the Coriolis Compact and for liquid suspension of the collected sample.

The user must read this manual carefully before using the Coriolis Compact air sampler.
Contact the manufacturer immediately if there is any doubt relating to the safety of this unit.
The technical specifications of this product and all information in this manual are subject to change without prior warning.

1.1 Safety instructions and recommendations

This manual must be read carefully by any user before using the Coriolis Compact air sampler.
Operating this unit without following the instructions provided in this manual may impact the protection provided by this unit.

If you have any doubts or concerns regarding device safety, please contact us via email at airsampler@bertin.group or contact your local distributor. You can find your local distributor on the Bertin Instruments website.
Bertin Technologies shall not be held liable for any damage or injury that may arise from the use of this device in any manner other than that indicated in the present document.

Manufacturer address:

BERTIN TECHNOLOGIES

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78053 Saint-Quentin-en-Yvelines Cedex
FRANCE

Tel: +33 (0)1 39 30 60 21

E-mail: air-sampler@bertin.group

Recommendations:

Do not remove the Coriolis Compact casing
Do not attempt to remove the battery from the Coriolis Compact unit (See §3.1)

Specific recommendations relating to the battery and charger:
Use only the charger supplied with the unit.
Never charge the unit when close to flammable materials or products.w
Never dispose of the unit or battery on a fire and never subject them to high temperatures.
The battery cells contain electrolytes, which may pose a risk to health. In the event of contact, rinse well with cold water and seek medical assistance immediately.
Units containing a lithium battery must be stored with the battery charge being at least 30%. If it is stored fully discharged, the integral battery will quickly become unusable and potentially hazardous. It is recommended to check the battery's state of charge every 6 months and to recharge it as necessary.
If you notice any damage to the unit or battery, do not recharge it. Contact your local distributor or the manufacturer.
Never leave the unit in a location where the temperature could exceed 60°C.

1.1.1 Risk of electric shock

In order to avoid any risk of electric shock, the equipment's power supply must be connected to an installation that complies with the standards in force.

If the system does not start up, we ask that the operator contacts the manufacturer.

It is essential that all users are aware of the potential risks associated with the use of liquids near to an electrical power supply. If any liquid is spilled, the unit must be disconnected immediately from its electrical power supply by pulling out the mains plug, even if the unit is running. The unit must then be dried and the spilled liquid wiped up.

1.1.2 Risk of explosion

The equipment is not ATEX-rated, so it must never be used in an explosive atmosphere.

1.1.3 Risk of bio-contamination

Where applicable, gloves must be worn when handling the sample, in order to avoid any risk of contamination of the sample by the user and vice-versa. Please refer to the applications employed within your laboratory to ensure that the laboratory best practices are applied.

1.1.4 Noise level

During normal operation, the device generates a noise level of 62dB(A) (acoustic pressure measurement obtained at a distance of 1m from the unit's surface).

1.1.5 Heavy-duty operation

Heavy-duty use of the system (sample collection >8 hours) may result in components heating up and therefore premature system wear.

1.2 Technical assistance

Should a problem occur for which the solution is not listed in this manual, please contact the manufacturer or your local distributor.

1.3 Warranty

BERTIN TECHNOLOGIES guarantees that the equipment is fault-free at the time of shipping.
This warranty is limited to a one-year (1 year) period and does not cover the batteries.
It is not applicable in the following scenarios:

- If the equipment has not been installed, handled or maintained in accordance with the instructions provided in this manual.
- If the equipment has been opened, repaired or modified by unqualified personnel.
- If the product serial number has been defaced or removed.

2 EQUIPMENT DESCRIPTION

The Coriolis Compact is a dry-cyclone technology-based system for collecting physical and biological particulates from the air. It is supplied in a carry case containing:

- The Coriolis Compact unit
- A battery charger
- 1 pack of 10 single-use collection assemblies (cone + air intake)
- 1 pack of 10 collection cone caps
- This instruction manual
- The calibration certificate

① **Carry case:** includes a specific foam inlay for holding the unit's various components.

② **Charger:** for charging the device's battery.

③ **Coriolis Compact:** detailed view in Figure 2

④ **Cones, caps, and air intakes:** supplied in packs of 10 single-use units

Figure 1: Coriolis Compact carry case

Figure 2: Coriolis Compact description

1. **Control panel:** for powering the unit On/Off, operating controls and menu navigation
2. **Play/Pause button:** for switching on the unit, starting a collection cycle, pausing a collection cycle and confirming selections when navigating the menu
3. **Up/Down arrows:** for menu navigation
4. **Back button:** for exiting the menu, stopping a collection
5. **Carry strap clip (optional):** for attaching a carry strap for transporting the unit
6. **Quick Connect Collar:** for securing the air intake and the collection cone
7. **Collection cone:** for collecting micro-organisms (the cap is screwed at the the end of the collection to preserve the sample)
8. **Air intake:** screws directly onto the collection cone, directs air flow into the collection cone
9. **Charger connector:** for recharging the unit's battery when it is plugged into the mains power supply.

2.1 Operating principle

During the collection process, airborne particulate matter in the ambient air is aspirated into the collection cone via cyclonic action and pulled towards its walls.

Figure 3: Coriolis Compact operating principle

Stages:

1. A sterile cone is placed onto the unit and locked into position
2. The aspirated air enters the cone
3. The airborne particles adhere to the cone wall
4. The collected particles are recovered by adding suspension liquid to the cone

2.2 Specifications

Technical specifications	
Power supply voltage	90 ->264 VAC @47-63Hz
Energy consumption	36W max
Temperature cut-out	50°C (+- 5°C)
Electrical safety rating	Class 3
Dimensions	
Coriolis Compact dimensions	255 x 135 x 130mm
Carry case dimensions	464 x 366 x 176mm
Weight	
Coriolis Compact weight	1.4Kg
Carry case weight when full	5.060Kg
Operating conditions	
Use	Indoor and outdoor (IPX3)
Temperature	+5°C to +45°C
Temperature during charging	+0°C to +40°C
Humidity	10% - 90%
Mean flow rate	50L/min

Figure 4: Summary table of Coriolis Compact main specifications

The battery charger is specifically for the unit. Do not use any other charger. The batteries are of the Li-Ion type in compliance with subsection 38.3 of the UN Manual of Tests and Criteria.

Please refer to the current legislation applicable in your country if necessary (see Section 3.1 TRANSPORT and §1.1 recommendations relating to batteries)

2.3 CE marking

This equipment is compliant with the requirements of the CE marking and FCC Part 15 guidelines:

Figure 5: Example Coriolis Compact identification plate

3 TRANSPORT/STORAGE

3.1 Transport

The Coriolis Compact unit must be transported in its carry case.
The equipment contains Li-Ion batteries, which are type-approved in accordance with subsection 38.3 of the UN Manual of Tests and Criteria and have a low power output (<100 Wh), so they are not classed as dangerous goods.
When in its carry case, the Coriolis Compact unit may be transported by road without any specific restriction and by air either in the cabin or in the baggage hold of a passenger aircraft.
When transporting the unit (with its battery), a label stating "UN3481: Lithium-Ion batteries contained in or packed with the equipment" must be affixed to the exterior packaging (see example below).

In all instances, please refer to the legislation in force in your country.

3.2 Storage

The unit must be kept in a dry location at a temperature of between +5°C and +45°C.

The unit may be charged in a dry location at a temperature of between +0°C and +40°C.

Please refer to Section 1.1 Safety instructions and recommendations, for details of how to store the batteries.

4 INSTRUCTIONS FOR USE WHEN PERFORMING A COLLECTION

4.1 Installing the single-use assembly

1- Ensure that the lock is in the open position on the quick connect collar

2- Insert the top of the cone into the designated location

3- Lock the securing collar by turning softly it to the right (not more 180°) until you feel some resistance

4- The secured padlock symbol is visible on the quick connect collar and the cone is held in place

- Handle the securing collar with precaution, you don't need to force the system.
- Check that the quick connect collar is indeed in the locked position and that the cone is located and secured correctly.

If it is not, unscrew the securing collar through one quarter of a turn to set it to the correct position (the "open padlock" symbol is visible).

- Insert the single-use assembly into the securing collar cradle.
- Once the single-use assembly is placed correctly, set the collar to the closed position to lock the assembly in position.

4.2 Starting up the air sampler

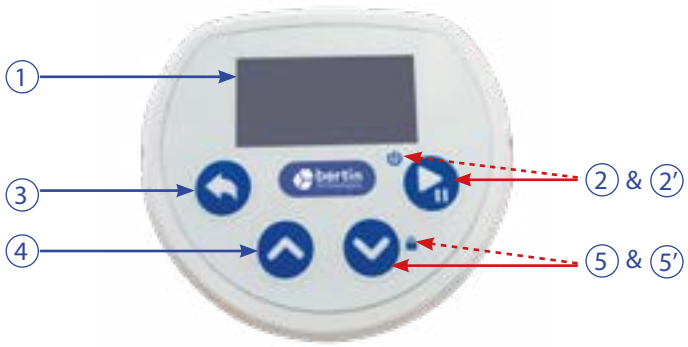


Figure 1: Interface

① **Display screen:** displays the menu, collection selections and unit settings

② **Play/Pause button:** for switching on the unit, starting a collection cycle, pausing a collection cycle and confirming selections when navigating the menu.

②' **Device On/Off:** press and hold to switch the unit on or off

③ **Back button:** for exiting the menu, stopping a collection

④ **Up arrow button:** for menu navigation

⑤ **Down arrow button:** for menu navigation

⑤' **Padlock:** pressing and holding this button locks the keypad and prevents a collection from being stopped unintentionally once started.

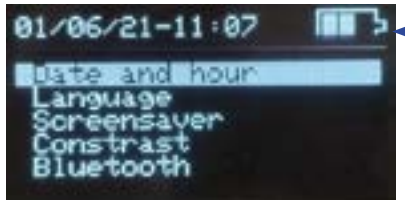
4.3 Self-testing

The system performs self-testing during start-up.
If the self-test reveals no faults, the message "Autotest OK" will be displayed for 1 second, after which the main menu will appear.
If the self-test fails, the message "Autotests KO" followed by an error code will be displayed until the operator confirms this.

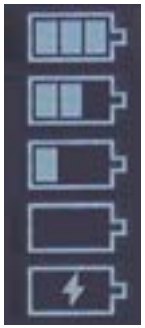
Code	Nom	Signification	Action
0x0002	LOGICIEL	Software error.	Restart the unit. If the fault persists, return to manufacturer
0x0004	BATLOW	Insufficient battery voltage. The unit saves the current settings then powers down. After charging and restarting the system, it will resume operation in the state that it was in when it powered down.	Charge the battery. If the fault persists, return to manufacturer.
0x0008	BATHIGH	Battery overvoltage	Return to the manufacturer.
0x0010	DEFCHARGE	Charger fault	Return to the manufacturer.
0x0040	MOTNOTOK	Turbine state reading KO	Return to the manufacturer.
0x0100	BLUETOOTH	Communication with Bluetooth module KO	Return to the manufacturer.
0x0200	GPS	Communication with GPS module KO	Return to the manufacturer.
0x0400	SDCARD	SD card corrupt or full	Return to the manufacturer.
0x0800	HORLOGE	The date and time have not been specified by the user.	Set the date and time via the HMI. If the fault persists, return to manufacturer.

4.4 Battery and mains power supply

The Coriolis Compact unit may be battery-operated or run on a main power supply.



① **Battery charge:** indicates the battery charge level



3 bars = battery charge > 75%

2 bars = battery charge > 50%

1 bar = battery charge > 25%

Indicator empty and flashing = battery discharged (< 25%)

Indicator with lightning bolt = battery charging

The battery life when in operation is approximately 8 hours.
If the battery charge level is not sufficient for the duration or number of collections to be performed, connect the charger to the equipment via the jack socket then connect the charger to the mains power supply.
Samples may be taken while the battery is charging (unit plugged into the main power).

Figure 2: Charging

① **Jack socket:** For charging the Coriolis Compact

② **Charger:** Coriolis Compact charger

4.5 Starting/stopping collection

Once the device has been started up and the single-use assembly installed correctly, use the arrows to navigate the main menu and select collection mode, then confirm with the "PLAY" button.
The "RESET" button returns you to the previous menu. Pressing and holding the down arrow locks or unlocks the keypad, to prevent unintentional operations during the collection (unintentionally stopping the collection process, etc.).

① **Immediate collection:** Starts collection without programming, stops at user request.

② **Simple collection:** Starts a collection delayed by an interval T1 and stops after a programmed period T2.

③ **Advanced collection:** Starts a collection delayed by an interval T1, stops after a programmed period T2 and then restarts after a timed delay T3, performed over N cycles (T1+T2).

Note: For the immediate sampling, the screen continuously displays the time elapsed from the start of the collection throughout the entire collection process For the simple and advanced program it displays the time remaining since the start of the collection process.

4.5.1 Immediate collection

In immediate collection mode, you may set the collection to start without programming and to stop upon user request.

1- Press the "Play" button to select Immediate collection

2- The start-up menu is displayed

3- Press the "Play" button to start the collection: the collection starts without a predefined period

4- Once the required collection time has been reached, press the "Back" button to stop the collection in progress

5- Press the "Play" button to confirm stopping the collection

4.5.2 Simple collection

In Simple collection mode, you may set a collection start time delayed by an interval T1 and set it to stop after a programmed period T2.

1- Navigate through the menu and press the Play button to select Simple collection

2- Select the first pre-programmed setting by pressing the "Play" button

3- Define the settings using the "Play" button to confirm and the arrows to select the correct values (duration, delay period)

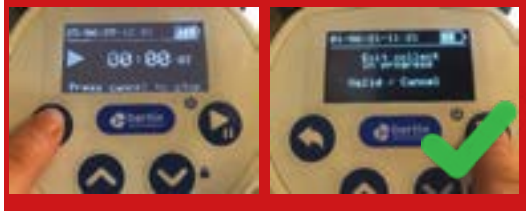
4- Use the arrows to return to the "Start collection" option then press the "Play" button to start the collection

5- The collection starts after the defined delay interval and stops automatically at the end of the programmed period

6- Press the "Play" button again to return to the start menu

Otherwise, you can stop the current collection cycle by pressing the "Back" button.

WARNING – IMPORTANCE
Stopping the collection before the given instruction



4.5.3 *Advanced collection*

In Advanced collection mode, you may set a collection to start after a delay interval T1, stop after a programmed period T2 and then restart after a timed delay T3, performed over N cycles (T1+T2).

1- Navigate through the menu and press the "Play" button to select Advanced collection

2- Select the first pre-programmed setting by pressing the "Play" button

3- Define the settings using the "Play" button to confirm and the arrows to select the correct values (duration, delay period, number of cycles and pause)

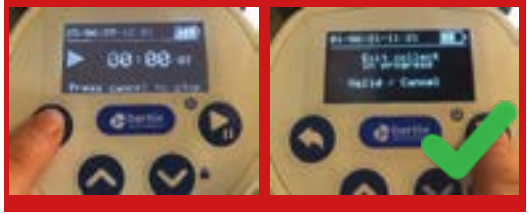
4- Use the arrows to return to the "Start collection" option then press the "Play" button to start the collection

5- The collection starts after the defined delay interval and stops automatically at the end of the programmed period once the various programmed cycles have been completed

6- Press the "Play" button again to return to the start menu

Otherwise, you can stop the current collection cycle by pressing the "Back" button.

WARNING – IMPORTANCE
Stopping the collection before the given instruction



4.6 *Suspending the collected sample in a solution*

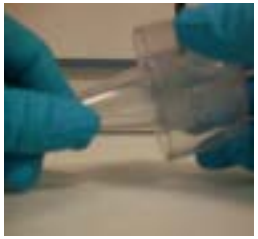
The suspension protocol detailed below is provided for information purposes. Optimisation may be required depending on the samples being collected and the applicable recommendations within your laboratory.
The following protocol has been drawn up with the aim of limiting the risk of contamination of samples by the user and vice-versa.
Depending on the biological sample being sought, we recommend the user to wear the following personal protective equipment as applicable from this solution suspension stage onwards: gloves (latex or nitrile laboratory-type), mask and protective goggles, handling samples under a fume extractor hood if necessary.

1- Remove the cap from its packaging

2- Unscrew the quick connect collar to recover the single-use assembly (open position)

3- Remove the single-use assembly from its position

4- Release the cone from the collection head by unscrewing the latter and add between 0.5 ml and 4 ml of buffer solution (not provided) into the cone



5- Wipe the walls of the collection cone using a swab (not provided).

6- Agitate the sample by hand by inverting it (or using a vortex if equipment is available) and seal the cone again using the cap. The sample is now ready for analysis

Recommendations:
You may adapt the suspension buffer solution according to the biological sample being sought and as a function of its compatibility with the analysis protocol.

Note: If collecting samples in a contaminated zone, the external surface of the single-use assembly must be decontaminated before being returned to a clean zone to ensure that the clean zone is not contaminated.

5 SETTINGS

The various unit configurations can be accessed in settings mode.

1. Date and time: Use the arrows to set the date and time

2. Language: Use the arrows to set the language (French/English)

3. Standby mode: Use the arrows to activate the unit's Standby mode

4. Contrast: Use the arrows to adjust the unit's contrast

5. Bluetooth: Use the arrows to activate or deactivate Bluetooth mode

6 CLEANING AND DECONTAMINATION

For safety reasons and to avoid damage to the units or personal injury, the following instructions must be followed closely:

DISCONNECT the charger before cleaning
DO NOT USE abrasive sponges
DO NOT USE lye or acetone

6.1 Cleaning

The Coriolis Compact unit must be cleaned after every sampling, following the procedure below:

- Disconnect the charger
- Place the cap on the power supply jack socket
- Use a wipe dampened with a surfactant-water solution to clean the external parts of the Coriolis Compact unit
- If the power supply cable has been in contact with the contaminated environment, clean it in the same way
- Wipe down the assembly using a soft cloth

6.2 Decontamination

If samples have been obtained in a zone that is contaminated by biological agents, a decontamination step is required after cleaning.
The decontamination procedure detailed below is that implemented by Bertin during testing. It is recommended that you adapt the decontamination procedure according to the risk of infection.

- Spray the external parts of the Coriolis Compact with 12° chlorometric bleach
- Leave to incubate for 30 minutes
- Rinse carefully with fresh water
- Dry using a soft cloth

Note 1: decontamination must only be performed on equipment items that have already undergone cleaning.

Note 2: decontamination must not be performed multiple times in succession to avoid damaging the unit.

7 MAINTENANCE AND SERVICING

With the exception of decontamination, no specific maintenance is required. BERTIN TECHNOLOGIES recommends performing manufacturer flow testing of the unit at least once per year.

8 DISPOSAL

In order to comply with legislation, Bertin Technologies contributes to the ECOSYSTEM environmental organisation's recycling programme, which recovers, free of charge, items such as end-of-life electrical lighting equipment, testing and monitoring equipment and medical equipment sold in France (for further information, visit www.ecosystem.eco)

Please refer to the legislation for your country to confirm the methods for recycling this unit. For further information, please contact your local distributor.

9 APPENDIX 1: EC DECLARATION OF CONFORMITY

bertin

Ref. : 010772-073-PV002-A

EC Declaration of Conformity

MANUFACTURER: **Bertin Technologies**

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Montigny-le-Bretonneux - FRANCE

Postal address: Boîte Postale 284
78053 Saint-Quentin-en-Yvelines Cedex - FRANCE

DECLARES THAT THE EQUIPMENT REFERENCED BELOW:

- Designation: Coriolis Compact
- Type: Air Sampler
- Reference: P002114-CORC0-A.0 / P002055-CORC0-A.0
- Date of Manufacturing: 2020
- Serial number: From SN004

CONFORMS TO:

- The Machinery Directive 2006/42/EC
- The EMC Directive 2014/30/UE
- The Directive 2011/65/UE, amended by Directives 2015/863 et 2017/2102, on restriction of the use of certain hazardous substances in electrical and electronic equipment

Done at: Aix en Provence Date: 24/11/2020

Name: J. Roch

Position: Directeur Général Adjoint

Visa:

Person authorized to create the technical file:
Bertin Technologies, 10 bis avenue Ampère - Montigny-le-Bretonneux - France

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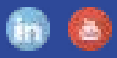

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